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AUGUST 1990

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THE WIA RADIO AMATEUR'S JOURNAL

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Amateur Radio is published by the Wireless Institute of Australia, as its Official Journal, on the last Friday of the previous month.

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weekdays

Deadlines

	Editorial	Hamads
Sept	6/8/90	8/8/90
Oct	10/9/90	12/9/90
Nov	8/10/90	10/10/90

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA.
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Cover

Yuri Zolotov — one of the more famous USSR amateurs, made contact with the trans-polar Soviet-Canadian expeditions in 1988. Photo shows Yuri Zolotov at home at his radio station. See his article on p22. Photo: B Prikhodho (Novosti 1988).

EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

Reading An Editorial

"Hey", you say, "What's this? You're the guy who's writing the stuff! We're reading it. What gives?"

The reason is that I have just been reading editorials; not just one, but many, from a whole range of overseas amateur radio magazines, so that I am now suffering from more than a little editorial indigestion! "Why this masochism?", you ask. You are allowed to insult all those hard-working editors. I mustn't, being one of them! So I can't call it masochism, even if it was, can I?

The first thing I noticed

about all those editorials was that they were too long. Mostly, they had lost me before the second column. That was a pity, because they were all on important themes, like the future of amateur radio, falling membership numbers, and the need for Morse Code. Don't let me get started on any of those; I might carry on for a page or two, too!

Why was I reading all these other editorials? Looking for inspiration, mainly. Having spent all of last weekend around the Executive Office table at the quarterly mini-Convention with all Federal Councillors present (unfortunately, one was missing, but that's irrelevant) I guess I,

like all the others, am still suffering from information overload. It was an excellent meeting, with over 30 agenda items, which occupied about 14 hours of formal discussion, plus much informal chatter during breaks. This relatively new way of running the WIA has certainly achieved its aim of bringing the Divisions closer together. All those big topics I don't want to get started on rated at least a mention in the discussions. Some were mentioned for hours.

Anyway, I don't know whether I was inspired or not by all those editorials. But I did see that we radio amateurs are not only a world-

wide fraternity, but we also have world-wide problems, some of which threaten our very existence. They can only be solved by united action. The IARU has as members virtually every national radio amateur society, and similarly each society should comprise most, if not all, of that country's amateurs.

I haven't lost you yet, have I? Surely I haven't gone on for too long already? Maybe you don't agree with all of the last paragraph. Do you want to be a Radio Amateur, much as now, beyond 2000? Or even beyond 1992? United we stand, divided we fall. And this editorial is now quite long enough!

Wireless Institute of Australia

The world's first and oldest National Radio Society - Founded 1910

Representing Australian Radio Amateurs - Member of the International Amateur Radio Union
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WIA NEWS

BILL ROPER VK3ARZ GENERAL MANAGER & SECRETARY

Draft Spectrum Plan

DoTC recently forwarded a copy of a draft Australian Spectrum Plan to the WIA for comment. Here are some extracts from the WIA response to DoTC which clearly show the areas of our concern...

"The WIA notes with concern a major difference, as far as the Amateur and Amateur Satellite services are concerned, between this Draft Plan and the current Australian Table of Frequency Allocations. This difference con-

cerns the allocations on the band 420 to 450 MHz.

In the Australian Table of Frequency Allocations, 420 to 450 MHz is allocated to Radio Location on a primary basis, with Amateur on a secondary basis. This particular allocation arose out of footnotes 651 and 652 entered into the International Frequency Table at WARC 79 and carried over into the Australian Table of Frequency Allocations as a variation from the Frequency Table applying to Region 3.

The Draft Plan is different in that Fixed and Mobile have been inserted in the band 420 to 450 MHz as co-secondary

services alongside the Amateur Service.

The Amateur Service believes Australian Table of Frequency Allocations on the band 420 to 450 MHz should remain the same on any new Australian Spectrum Plan for the following reasons:

1. Since the withdrawal of the 576 MHz Amateur band it has been necessary to make arrangements for relocation of displaced amateur television repeaters. This will in many cases be achieved by the use of in-band repeaters on the 420 to 450 MHz band making use of both the TV channels in the Amateur Service band plan for this band. This will cause an extra load on the usage of this band by Amateur stations transmitting TV.

2. The band is extensively used by mobile stations in the Amateur Service with an Australia wide network of repeater stations.

3. The band is also used for propagation experiments using very weak signals, for example using the moon as a passive reflector.

Sharing with Radio Location has generally been satisfactory to date with some concern expressed due to the operation of SYLEDIS systems, which appear not to comply with Aus 11. However, the introduction of fixed and mobile services to the table in this band will cause unnecessary problems for the Amateur Service. It should be noted that this band is the lowest band on which amateur TV transmissions can be made.

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1990 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Ted Pearce Secretary Jan Burrell Treasurer Ken Ray	VK1AOP 3.570 MHz VK1BR 2m ch 6950 VK1KEN 70cm ch 8525 2000 hrs Sun	(F) \$65.00 (G) (S) \$52.00 (X) \$39.00
(R Denotes repeater) Times 1045 and 1915 on Sunday				
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1088 Parramatta) 2124 Phone (02) 689 2417 Fax (02) 633 1925	President Roger Henley Secretary Tim Mills Treasurer David Horstall Office hours Mon-Fri 1100 - 1400 Wed 1900 - 2100	VK2ZIG 1.845 MHz AM, 3.595 AM(1045) SSB (1915 only), 7.148 AM (1045 only) 10.125 SSB (1045 only), 28.320 SSB, 52.120 SSB 52.525 FM (144.12 (SSB), 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) 1281.75FM (R) Relays also conducted via many repeaters throughout NSW.	(F) \$59.00 (G) (S) \$47.00 (X) \$33.00
VK3	Victorian Division 39 Taylor St Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Halley Office hours 0900-1800 Tue & Thur	VK3PC 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw VK3XV 146.800 FM(R) Mildura, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) \$65.00 (G) (S) \$52.00 (X) \$39.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Rose Mutzeburg Secretary Eddie Fisher Treasurer Eric Finck	VK4IY 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.950, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday VK4ABX Repeated on 3.605 & 147.150 MHz, 1930 Monday VK4NEF	(F) \$65.00 (G) (S) \$52.00 (X) \$39.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Rowland Bruce Secretary John McKellar Treasurer Bill Wardrop	VK5OU 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North (NT) 3.555, 146.500, 0900 hrs Sunday	(F) \$65.00 (G) (S) \$52.00 (X) \$39.00
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Alyn Maschette Secretary John Farnan Treasurer Bruce Hedland Thomas	VK6KWN 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (Barbury) 147.225(R) 147.250 (R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs.	(F) \$56.00 (G) (S) \$45.00 (X) \$30.00
VK7	Tasmanian Division 148 Derwent Ave Lindisfarne TAS 7015	President Tom Allen Secretary Ted Beard Treasurer Peter King	VK7AL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RWN), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$63.00 (G) (S) \$50.00 (X) \$38.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).		Membership Grades Full (F) Needy (G) Non receipt of AR	Three year membership available to (F) (G) (X) grades at fee x 3 times (X)

Note: All times are local. All frequencies MHz.

We feel that the introduction of any fixed and mobile service stations would also be extremely detrimental to the limited facilities available to the Amateur Satellite Service and could lead to these services being unintentionally repeated on international amateur satellites.

The WIA feels rather disappointed that these changes have been proposed at a time when sharing issues are being studied by the CCIR as part of the preparation for WARC 92, thereby appearing to pre-empt CCIR considerations.

Other matters in the Draft Australian Spectrum Plan of concern to the WIA are:

1. BANDS AVAILABLE TO THE AMATEUR SATELLITE SERVICE.

Since 1979 there has been a great increase in the number and use of satellites in the Amateur Satellite Service - see CCIR report N8.

In the five amateur bands between 148 MHz and 10.45 GHz the Amateur Service has access to a sub-band as designated in footnotes 644 and 808 to the International Frequency table in the International Radio Regulations.

As the text of each footnote is only printed once, some confusion is caused to those who are not familiar with the Amateur Satellite Service. In fact this happened very recently during the preparation of the Spectrum Review for 930-3400 MHz.

We therefore suggest that for the sake of clarity the actual Amateur Satellite Sub-bands mentioned in the Footnotes should be included in the Frequency Table with the required direction indicators.

Due to the great importance of these Amateur Satellite Sub-bands to the Amateur Service as a whole, we feel that they should be mentioned in the Australian Table.

Further, we feel that in the Australian frequency plan that within these Sub-bands, the Amateur and Amateur Satellite Service should be raised to the level of a primary service.

We also feel that the Amateur and the Amateur Satellite Service should be raised to primary status in the band 10.45 - 10.50 GHz.

In fact, we would prefer 10.45 - 10.50 GHz to be an exclusive Amateur and Amateur Satellite Service Band.

2. CONCERNING THE FREQUENCY BAND 10.100-10.200 MHz

At WARC-79 Australia proposed a new exclusive amateur band from 10.10 to 10.20 MHz. As you know, the Conference decided to allocate 10.10 to 10.15 MHz to the Amateur Service on a secondary basis. There was, however, significant support for a band 100 kHz wide and even support for an exclusive amateur band at these frequencies.

It is interesting to note that Footnote 510 to the International Frequency Table includes the 10.1 MHz band. This Footnote refers to the use of amateur bands in the event of natural disasters with reference to Resolution 640 contained in the ITU Radio Regulations. On this band the Amateur Service is very much aware of the importance of not causing interference to the primary service.

It has been demonstrated that this band has great potential for Australia-wide communications throughout the day, as well as for international communications during a period of each day. This communications potential is somewhat limited by the fact that the band is only 50 kHz wide and the Amateur Service is secondary which, at certain times, leaves only a few spots for the "frequency agile" Amateur Service to operate on.

The amateur Service takes considerable care not to cause harmful interference on its shared 10.1 MHz band. However, on many of the HF amateur bands where the Amateur Service has primary status, the stations of many administrations do not seem to care about the harmful interference that they cause to stations of the Amateur

Service.

It is therefore suggested that on the Australian Frequency Plan, the Amateur Service is also given access to 10.150 to 10.200 MHz on a non-interference basis.

3. THE BAND 3500-3800 kHz

One of the most used amateur bands in Australia is 3500 to 3700 kHz.

This is one of the three HF amateur bands which has a novice sub-band. This novice sub-band gives the novice amateur the ability to communicate over short to medium distances which is not often possible on the two other sub-bands that they are permitted to operate on, namely 21 and 28 MHz.

Due to the greater width of the 3500 kHz amateur band in most other countries, intercontinental communications by Australian amateurs are made more difficult due to overseas amateur band usage planning. This point has been appreciated by the Australian Administration and a small sub-band 3794 to 3800 kHz has been made available to the Amateur Service. It is interesting to note that the number of amateurs in Australia has grown from 12696 in 1979 to 18314 in 1989.

We consider that 3700 to 3800 kHz should be made available to the Amateur Service.

This is less than the Region 3 allocation, but is in line with the Region 1 allocation. An increase in the amateur allocation as a whole would make it possible to increase the very congested novice amateur sub-band.

We are aware of the perceived continued need for HF frequencies to be used by fixed and mobile stations. We are also aware of available satellite capacity and the development of future mobile satellite services which will be very reliable and will attract HF users. Given this situation, together with improving techniques on HF, we feel that any other services would not be disadvantaged in the long term by this proposed extension

to the amateur band.

We are also aware that there is an addition to the 3500 to 3700 kHz amateur band, transition procedures would have to be carried out over a period of time."

Current Issues

Two of the most controversial issues currently concerning radio amateurs in Australia are repeaters and repeater linking, and operation of packet radio. Many concerns, ideas and suggestions have been discussed over recent months.

The WIA recognises the need to identify current problems and to overcome any communication gaps between users, the WIA, and DoTC. The Chairman of FeTAC, John Martin VK3ZJC, prepared a six page report on repeater linking, with several recommendations for change. This report was discussed at length at the Executive meeting of the WIA held over the weekend of July 7th and 8th.

Amongst other things, it was resolved that:

1. The WIA would approach DoTC to seek the lifting of the ban on off-air linking of repeaters.
2. WIA Divisions negotiate immediately with repeater groups and licensees to adopt the existing 123 Hz CTCSS tone for intermodulation interference protection.
3. WIA Divisions negotiate immediately with repeater groups and licensees to adopt the 141.3 Hz CTCSS tone for access to repeaters that have the potential to retransmit a licensee out of his authorised band.
4. Standard DTMF tones be used for repeater system and control purposes.
5. The dual frequency link requirement and 5 watt power limit be removed from the bandplans.

It was also resolved that FeTAC prepare a detailed paper to support a request to DoTC to relax its stringent repeater identification re-

quirements.

After considerable discussion on packet radio, FeTAC was requested to prepare a detailed report on packet radio protocols and identification requirements. This report is to take into account the current requirements in Australia and overseas countries. It is also to emphasise the continuing need for freedom in packet networking experimentation

Executive Meeting

The first quarterly Executive meeting since the Convention in April was held over the weekend of 7th & 8th August 1990.

This meeting considered a wide range of issues. The agenda included over 30 items for discussion. A number of issues arose from or were postponed from the 1990 Convention. Some were fairly routine (eg. development of more uniform membership procedures; Executive office computer systems).

Many were of considerable importance to the future of the amateur service in Australia (eg. WARC 92 representation and IARU matters, in addition to the repeater and packet radio matters mentioned earlier).

The reviewing of some WIA policy, discussion of amateur examinations, the comprehensive report on the WIA QSL bureaux, planning of recruitment strategies for newcomers to our hobby and membership of the WIA took considerable time.

The 31 items placed on the agenda for the WIA/DoTC Joint Meeting to take place on 24th July 1990 were also discussed in detail.

Joint DoTC/WIA Meeting

The next joint meeting between representatives of the WIA and the DoTC Regulatory Section in Canberra, will take place on Tuesday July 24th in Melbourne.

These joint meetings are an established avenue of liaison between the two organisations. They contribute considerably to the good relationship the WIA has enjoyed with the Government body regulating the amateur service in Australia. The meetings are held every three to four months to allow discussion of matters which have arisen and to assess progress on continuing negotiations.

The 31 items on the agenda for this meeting include an update of reciprocal licensing with a number of countries, third party traffic agreements, on-air advertising, repeater linking, bandplans, and examination development.

Commercials on 80 Metres

A few weeks ago, Don Shand VK3DZM, a keen 80 metre DXer, contacted the WIA Executive Office. Several new commercial Fixed and Mobile Service stations had suddenly appeared in the middle of the 3.794 to 3.800 MHz "DX Window" segment of the amateur 80 metre band. These intruders were located in Western Australia, Victoria and Queensland.

The amateur service is the secondary service in this frequency segment. However, when the WIA won this "DX Window" for the Australian amateur service, DoTC promised not to allocate any new commercial licences in the segment.

After two weeks of ap-proaches by the WIA, DoTC admitted an error had been made. The licences should have issued for the 3.9 MHz segment!

DoTC are now contacting these Fixed and Mobile Service stations and arranging for them to move to the correct frequencies. It may take a few weeks before they move.

Remembrance Day Contest

One of the most popular

events of the WIA calendar is the annual Remembrance Day Contest. This year it will take place on the 11th and 12th of August. The rules were published in the July 1990 issue of Amateur Radio magazine, commencing on page 22. Please check them, as there have been some minor alterations since last year.

Good luck to all participants. Remember that your score sheet has to be submitted for your Division to be credited with your score.

Recruiting WIA Members

The WIA is to conduct a national recruiting campaign during the second half of this year. WIA membership over the last few years has grown at a much slower rate than the total amateur population. This is a matter of concern, particularly when you consider the WIA represents the Australian amateur service nationally and internationally.

The cost of this representation is borne solely by WIA members. The WIA does not lobby for amateur service privileges or extensions to the bands for the exclusive use of WIA members only. WIA repeater policy has never limited access to members only.

Many of the costs of providing services to members are not in proportion to the numbers served. Office and telephone rental have a fixed component, and repeater licences and insurance do not depend on the amount of use they get. An increase in WIA membership would mean more services could be provided more cheaply.

Several possible ideas for recruiting have been submitted. Most of them eventually come down to the individual members making some effort to contact and persuade non-members of the WIA of the benefits of membership.

Have you forgotten some of the benefits of WIA membership? The Editorial in the

September 1987 issue of Amateur Radio magazine listed 35 services available to members overall.

Since then technical developments have added more services. WARC 92 has become of immediate interest.

Are YOU prepared to make an approach to non-members you know who are using WIA provided services such as repeaters? Are YOU prepared to persuade them to contribute their share towards the protection of the amateur radio service?

Callbook Entries

Please note that the closing date for changes to entries in the next Callbook has been set at July 31st. Information reaching the Executive office after that date will not be able to be included.

Please note that information or requests **MUST** be in writing.

Amateur Exam Confusion

Jim Linton, VK3PC, President of the VK3 Division of the WIA, has supplied the following news items relating to examinations:

Novice telegraphy test error

An error in the Department of Transport and Communications brochure DOC 70 has resulted in an alert being sent to all examiners.

The brochure sub-titled "Information for Prospective Amateur Operators" wrongly states that a candidate fails the Novice telegraphy receiving test if they have more than seven errors. Another document DOC 125B which contains the Novice syllabus correctly states "More than 10 errors will result in failure".

All examiners were instructed by DoTC to refer to DOC70 when marking telegraphy tests.

The Department admits the error and has asked all examiners to supply it with the names and addresses of Novice telegraphy receiving test

MAGPOBS

A Special Service of the Wireless Institute of Australia

Morse Code:

The Essential Language L. Peter Carron Jr., W3DKV
"Tells of the evolution from the straight key to computers." Gives practical advice on learning the code and its modern-day uses. There are 7 chapters: "Why the code," "A history of Telegraphy," "The Code," "Learning to receive and send," "High speed operation," "Distress calls," "The Future."
Morse code is steeped in tradition, not only in Amateur Radio but in other services as well. Although some of the thoughts it conjures up are of times gone by, the code is as useful today as it was the day of its invention. This small book will help you find out much and help you to learn the code.

ARRL Stock Number BX223 \$10.00



The ARRL World Grid Locator Atlas

Maidenhead Locator

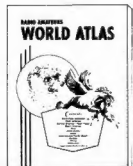
The ARRL World Grid Locator Atlas (Maidenhead Head Locator) contains 19 maps listing all 32,000 Maidenhead locator squares. Also there is a very complete index of all world major cities to make it easy to find the correct page, a quick to look-up world map divided in the 324 fields and a BASIC computer program listing for finding Direction and distance. In 1982 the Maidenhead locator system was adopted by IARU Region 3. In 1985 the Maidenhead locator system was adopted by IARU Region 2 and in April 1984 the Maidenhead locator system was adopted by IARU Region 1 as the new locator from 1985. Every DX'er and contest ham should have one in the shack.

8 1/2" x 11" Stock # BX197 \$8.00

THE RADIO AMATEURS WORLD ATLAS

All seven continents of the world including...

- North America
- South America
- Central America-West Indies
- Asia
- Indian Ocean
- Japan
- Australia & Pacific Ocean
- Europe
- Africa
- Antarctica
- North-Polar projection
- Country prefixes and zone boundaries on each map
- 20 pages in full color
- Size 8 1/4" X 10 1/4"



This WORLD ATLAS was compiled especially for radio amateurs. It is printed in four colours on durable coated stock, its compact size makes it ideal for use on Field Days or everyday use in the ham shack. This fine atlas contains a North Polar projection of the world and maps of all seven continents, the West Indies-Caribbean area and the Pacific Ocean. All maps projections were carefully chosen for minimum distortion and maximum usefulness to amateurs. Continental and zone boundaries are shown and a table of international call sign allocations is included to help you locate those rare ones.

Stock Number BX236 \$4.00

The above books, plus many more, are available from your WIA Divisional Bookshop. All items are less 10% discount for WIA Members and are plus postage and handling where applicable.

If not in stock at your Divisional Bookshop, your order will be taken and filled promptly. Not all publications are available from all Divisions.

candidates wrongly failed.

It was expected only a few candidates would originally have failed due to them having eight, nine or ten errors in copying the test text. DoTC will write to the candidates involved pointing out the error, telling them they had now passed, and apologising for the inconvenience.

The error appears to be in the word-processing for DOC 70 involving a block transfer of text from the AOCOP telegraphy receiving test which does have a fail point of more than seven errors.

Amateur theory exemptions

Some confusion exists on the amateur theory exemptions granted by DoTC to people holding certain technical qualifications.

The Department's brochure DOC 70 "Information for prospective Amateur Operators" Appendix A outlines the full and partial exemptions available.

An exemption from sitting an amateur theory examination can be obtained if an equivalent or higher qualification is held.

But the Department requires to individually assess the qualifications claimed and give an exemption in writing.

Several prospective radio amateurs have claimed they received a theory exemption "over the phone" from DoTC. The Department has recently confirmed that it does not give verbal exemptions on the basis of a telephone call. It requires to see a certified copy of the qualification and in some cases may need to make further inquiries before deciding to grant an exemption for either NAOCP or AOCOP theory.

Novice Study Guide

In February 1988 the WIA published a Study Guide to assist students and instructors preparing for the Novice theory examination. This book expands the official DoTC syllabus to define the extent

of each topic, and indicates how deeply a candidate should study each section. It also includes a guide to the expected lecture time to be spent on each syllabus section.

DoTC officials took a close interest in the preparation of the Guide, and endorsed it by agreeing to the standard set. Copies of the Novice Study Guide are available from Divisional offices, or the Executive Office, at a cost of \$2.50 plus postage.

Egyptian Echoes

The Executive Office recently received a copy of the first edition of "Egyptian Echoes", the newsletter of the Egyptian Amateur Radio Society, (EARS).

It includes an introduction to the newsletter, a history of amateur radio in Egypt from the 1920s on, a list of the 20 or so licensed amateurs in the country, and a profile of SUHER, Ezzat Ramadan.

EARS is taking active steps to increase the amateur population, and suggests ways in which the average amateur can help.

Egyptian Echoes is available free of charge on receipt of a SASE. The Editor's address is available from the WIA Executive Office.

QST Canada

The Editorial of the July 1990 edition of QST Canada raises the familiar theme of the need for active recruitment to the amateur service, and suggests strategies and target groups.

As stated by many other groups, recruitment depends on the hobby presenting a higher profile to the public, and a wide spread of publicity, including displays, and approaches to schools. **ar**

*Have you advised
DoTC of your
new address?*

ATU IN A CAKETIN

PETER PARKER VK6BWI
C/O PO WITCHCLIFFE 6286

An serial tuning unit transforms the impedance at the feedpoint of an antenna to the output impedance of the transmitter — usually 50 ohms. The ATU connects between the antenna feedline and the transmitter output and can allow a single antenna to operate on any band. For more information, I refer you to the excellent article by John Haerle WB1IR in the ARA Antenna Book 2, page 49. An ATU can also act as a harmonic suppressor.

An ATU is an excellent project for the beginner as it consists of only three or four principal components, but some of these can be difficult to obtain — notably the air spaced capacitor.

Plug the antenna are employed to simplify the unit and to permit short leads (important for 10 metres). The socket for the coil is an 8 pin valve socket available from old valve radio and TV sets. The coil bases come from valve bases. If the constructor has a collection of inoperative tubes the bases are easily removed, but the glass is very sharp and the debasing should be wrapped in newspaper.

The chassis was a 20x20x7 cm cake tin obtained from the local general store for \$2.75. This is much cheaper than a commercially made aluminium box as well as being easily obtainable.

The variable capacitor can be any air spaced unit with a maximum capacitance greater than about 200 pF. Before mounting this onto the chassis check to see if any plates touch together when the spindle is turned. If they do, gently bend the plates to ensure that they do not touch. The capacitor must be mounted such that it is isolated from the earthed chassis. A way to do this is to glue a piece of wood or plastic to the bottom of the capacitor, which is in turn glued to the chassis (cake tin).

If the ATU is to be for high power operation, a special variable capacitor with wide plate spacing must be employed.

We next come to the coil. Figure 4 shows how it is constructed. The spigot must be removed by crushing it with pliers to make a hole for the coil mounting bolt. The absence of the spigot makes it important to mark the correct orientation of the coil in its socket. To solder the

wire to the pin of the plug (coil base), firstly heat the end of the appropriate pin and remove the wire which originally connected to the valve elements (ie grid, plate, cathode, etc). Strip and tin the last centimetre of the coil lead and push into the base pin. Apply the soldering iron and the connection should be complete.

Once all four wires have been soldered screw the assembly together. Ideally a coil should be made for each band. But it is possible to use a coil for several bands especially at the higher frequencies. By unplugging a coil and rotating by 180 degrees, the windings are transposed so a higher frequency band can be covered. With experimentation, it is possible to produce a 80/40m coil. If slightly more inductance is required, drop a piece of ferrite rod into the film container. By the application of these two techniques, only two or three coils may be needed to cover the HF bands.

The wire gauge used for the coils is not of great importance, but insulated wire must be used. Below is a table of coil turns.

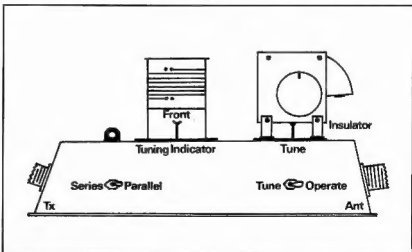
Transmitter Coil	Tuning/Aerial Coil*	
80m	5 turns	30 turns
40m	5 turns	10 turns
30m	4 turns	8 turns
20m	3 turns	6 turns
**15/10m	2 turns	5 turns

*0.7mm, enamelled copper wire.
(From old transformers, etc)

**Note 1: The coil for 10/15m is wound on a 15mm tube, which can be fitted into a film container for protection.

Note 2: Coils for 12 and 17 metres are not shown. either the 10/15m coil or the 20m coil will operate on these WARC bands.

The light bulb used as the tuning indicator is a small torch globe. This is quite suitable for QRP (less or equal to 5 watts output) but a larger bulb should be substituted for higher power. Alternately, the wire across the bulb will conduct most of the current—thus saving the indicator. The switch across the bulb is not essential but was included to save pre-



Parts List

- | | | | |
|---|------------------------|---|------------------------------|
| 2 | SO239 coax sockets | 1 | 10-415 pF variable capacitor |
| 1 | 20x20x7 cm chassis | 1 | 8 pin octal 8 pin socket |
| 2 | Binding post terminals | 1 | DPDT switch |
| 1 | 6.3v light bulb | 1 | SPST switch |
| | | | Knobs, wire, hardware |

cious output power when operating QRP.

The Series/Parallel switch allows the ATU to be used in two circuit configurations for both high and low impedance antennas: series for low impedances and parallel for high impedance aerial systems. The configuration chosen will vary from band to band; and sometimes both will operate satisfactorily on one band.

To test the ATU, short circuit the antenna connections and open the Tune/Operate switch. With the appropriate coil plugged in for the band in use, apply 5-10 watts of RF and vary the Tune capacitor for maximum bulb brightness. This position should not be at either end of the capacitor's range. If this is so, change the coil's inductance a little. Find a clear frequency, attach the antenna, and tune for maximum brightness. You are now tuned up on that frequency and operating can commence. For major shifts of frequency within a band, it is advisable to retune the ATU. If your transceiver has tune and load controls, there may be some interdependence with the ATU Tune control. Operators of solid state transmitters should note that the tuning of an ATU allows the impedance presented by the tuner to the RF output stage to depart significantly from 50 ohms and PA damage can result. To minimise this risk, low power should be used for the tuning process and a tuning indicator be fitted, such as the one in AR December 1985. This particular unit has been found to give good results and allows the antenna to be tuned with a constant 50 ohms on the PA output.

Note: It has been found necessary in some instances to include a coupling capacitor between the transmitter output and the RF input socket of the ATU. Its value should be around 0.005 μ F with a voltage rating of 630 volts — more for

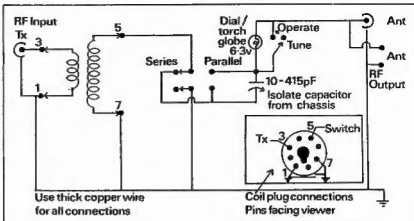


Fig2: Schematic Diagram of ATU

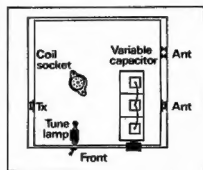


Fig 3: Top front view of ATU

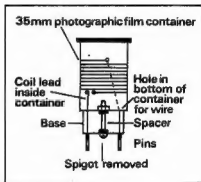


Fig4: Plug in Coil

high power. A styrofoam unit from old valve equipment works well.

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* W9SCH, *Rock on nator ATU, G-QRP Club Circuit Handbook*, p64.

* Bruce Doyle, VK6ABD, *Safe Tuning with the FT7*, *Amateur Radio*, p9 December 1985.

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South Australian 10 GHz Record

Following their new national 5.7 GHz record last November, Nick Tebneff VK5NT, and Des Clift VK5ZO, turned their attention to the 10 GHz band. On May 7, Nick operated from Illawarra Hill, and Des took himself to the summit of Mt Lofty, to establish a new VK5 record of 147.1 km.

Both stations used Gunplexer systems with a 30 MHz IF, operating on 10250 and 10280 MHz. One unit operated with AFC. The antennas were 40 cm fibreglass dishes with metallised paint surfaces, fed by tapered waveguide dipole-reflector feeds.

Signal reports were well over S9. As the test proceeded, they reduced system gain until at one stage Nick operated a 12 dB horn and could easily discern signals from the open waveguide of Des. Earlier tests had been made from Mt Barker and on a 68.5 km path from Mt Magnificent to Tailen Bend, also with 5x9 reports.

The photograph shows Des VK5ZO, smiling with glee on the summit of Mt Lofty.

INFORMATION SUPPLIED BY NICK TEBNEFF VK5NT

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HEALTH HAZARDS OF SOLDERING

A M BROWN VK2KJM

SENIOR LECTURER IN OCCUPATIONAL MEDICINE, UNIVERSITY OF NEWCASTLE

P J HOLIS-WATTS VK2YJW ELECTRONICS TECHNICIAN, MEDICAL COMMUNICATIONS UNIT, ROYAL NEWCASTLE HOSPITAL

Over the last few years more attention has been given to occupational health and safety and there has been a corresponding recognition that hobby activities may also carry health and safety risks. Our hobby of amateur radio has hazards and articles have appeared in Amateur Radio magazines about electrical safety, general safety in the shack, and the hazards of radio-frequency radiation^{1,2,3}... Most amateurs do some soldering at sometime or other but may not recognise that this could be hazardous.

Recently an electronics engineer was referred to an occupational medicine unit because of symptoms of headache, hay fever, cough, wheeze and nose bleeds. Unusually for this condition, this person did not seem to get much better at the weekends. This person's symptoms were eventually related to soldering, and the reason he did not get better away from work was that as an amateur he did some soldering at home too. This amateur said that he had been in electronics for 25 years but had never heard that soldering could make one sick. This article is thus a response to inform other amateurs.

What Is Soldering?

Soldering is a technique for joining metals by wetting the parent metals with a filler metal and filling the joint gaps by capillary action. Brazing and "silver soldering" are similar processes that use different filler metals and require the parent metals to be at a much higher temperature while welding is a process whereby the parent metals are actually fused. This is not an article about technical aspects of soldering so only a brief outline is given here. A number of technical books have been written about soldering and readers should refer to these^{4,5}.

Soldering has been used in many applications in joining pipes or sheets as in plumbing or radiator manufacture, or making cans (a use that is being replaced by welding) and in electronics. The rest of this discussion will be restricted to the use of soldering in electronics.

Most of us think of soldering in terms of building or repairing a piece of equipment for ourselves. This is manual soldering — a soldering iron in one hand,

solder in the other and the equipment on the bench. Of course in the electronics industries there is much manual soldering, but there is also mass soldering of printed circuit boards in the commercial production of electronic equipment, where printed circuit boards with components attached are moved by a conveyor over a bath of molten solder and a wave brings the solder to the board. In other situations wires are "tinned" by dipping them in a pot of molten solder.

The soldering process requires four things:

- a) an appropriate filler metal (solder);
- b) appropriate parent metals;
- c) a source of heat; and
- d) a flux

Solder is a mixture of tin and lead often with very small amounts of other metals such as antimony, copper, silver or cadmium. Solder melts at a low temperature (dependent on its exact composition); thus the amount of heating needed is not very great and can be achieved with a soldering iron. The common combinations of tin and lead are 60/40, 50/50 and 40/60.

Not all parent metals can be soldered with tin/lead solder. The commonly used one is copper but silver, iron and steel, zinc, nickel, gold, platinum and palladium are also solderable. Chromium and cobalt are impossible to solder.

Heat is required to melt the solder, and for electronics work a soldering iron is used for manual soldering, while for mass soldering the solder is heated by an induction furnace.

To be soldered the parent metals need to be clean. This means not only free of dirt, oil or grease, but also free from metal oxides. This is the role of flux. A flux acts to dissolve metal oxide films and to evaporate them as the flux itself boils. This leaves the clean parent metal, and the solder can flow over the surface. Fluxes may be inorganic or organic. The inorganic fluxes are things such as zinc chloride. These tend to be acidic and to attack electronic components and so are primarily used in plumbing.

There are a few special organic fluxes, but the type used for electronic work are organic resins or rosins. The terms "rosin" and "resin" are used interchangeably by manufacturers. Usually resin refers to

an organic material that is insoluble in water, while rosin refers to the resin distilled from the turpentine of certain pine trees. The medical and occupational health literature usually refers to rosin as colophony. Rosin may be diluted with turpentine as a flux paste or with alcohol as a liquid flux. Because pure rosin is not a perfect flux other materials (such as organic amines, amides or hydrohalides) may be added to it to "activate" it. These are usually amine hydrochlorides, which increase the flux's reactivity with metal oxides and improve wetting. These activated rosins are used in rosin-cored solder.

When soldering is done, there is usually quite a lot of visible fume. This is almost entirely the flux and the metal oxides being evaporated from the work piece.

Hazards Of Soldering

The major hazards of soldering relate to the effects of lead, effects on the skin, effects on the respiratory tract.

a) A frequent concern about soldering is the possibility of lead poisoning, yet in fact this is most uncommon. The reason is that in normal use the lead in solder cannot enter the body easily. Inorganic lead (as in solder) penetrates the skin very poorly, and this is not a significant route. Solder melts and is used at a low temperature, about 180C, and there is very little lead fume given off until much higher temperatures, so breathing in lead is unlikely. (In some non electronic uses of soldering, joints are buffed and this can produce respirable dust and in some industrial applications very fine grade solder powder has been a source of lead poisoning.)

The other way solder could enter the body and cause lead poisoning is by eating it. Now few people would even deliberately eat solder but it is possible to have lead on one's hands and transfer it to the mouth when eating or smoking. This would only be small amounts but they can add up. The person most at risk from the lead in solder would not be you but your small children. Small blobs of solder on the bench or floor attract children's interest and they often put things into their mouth.

A survey of solderers in electronics fac-

tories in New Zealand found that generally solderers do not have higher blood lead levels than the general population⁶.

As far as lead is concerned, always wash hands after using solder, before eating or smoking, and clean up blobs of solder and keep small children from handling it.

- b) Skin
- (i) Heat

Whenever one uses a source of heat, there is the possibility of burns. Modern soldering irons tend to have stands that enclose the hot tip to reduce the possibility of burns. Care is always needed handling a soldering iron. Drops of molten solder usually only give small burns but even these can be quite painful.

(ii) Dermatitis

Skin can be affected by things other than heat. The inorganic fluxes are often acidic and cause irritation (or burns) to the skin.

Over the past few years, a number of cases of allergic contact dermatitis have been reported in people exposed to soldering fumes at work in electronics factories^{7,8,9}. Specific testing of these people showed that they had become allergic, either to colophony in the flux, or to aminoethylethanolamine used as a flux

activator. In the workplace, allergic contact dermatitis settles with removal from exposure and medication, but usually recurs with re-exposure, necessitating a change of job. This type of dermatitis from soldering is rare, but it is a possibility.

c) Respiratory Tract

Breathing in foreign material can cause various reactions. Commonly, materials cause irritation to the upper airways characterised by nose and throat irritation and cough. Some material can cause asthma, which is a narrowing of the small airways of the lung, usually in response to some external agent, either by direct inflammation or by an allergic mechanism. A number of studies have shown clearly that exposure to colophony in soldering fumes can cause asthma^{10,11,12}. In one electronics factory, 22% of solderers reported having work-related respiratory symptoms (mostly breathlessness and/or wheeze)¹². In this factory, the solderers also had lower measures of lung function than workers in other jobs. Many of the solderers also reported work-related rashes and nasal inflammation (rhinitis).

If people are being affected by their work, they tend to leave, so any survey of a workplace will see only "survivors", and

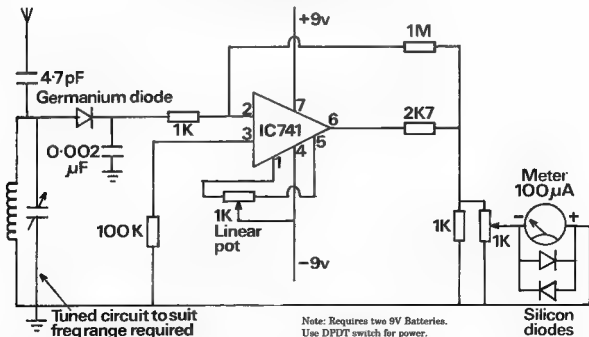
thus will tend to under-estimate the problem. A study of the people who had left this electronics factory found that there was a "survivor" situation, because a significantly greater proportion of people had left soldering jobs because of ill health than had left from non-soldering jobs.

The asthma that can be caused by work with colophony may occur after a variable period of time. It has been reported to occur after as short a time as two months and as long a time as 25 years¹⁴.

Colophony is not the only soldering relating cause of asthma. Other fluxes such as a polyether glycol mixture¹⁵ (used in electronics situations) and aminoethyl ethanolamine¹⁶ (in aluminium brazing) have been implicated. Other agents come not from fluxes but from wire coatings. The varnish on copper wire is often a polyurethane compound. Polyurethanes are made up of, and break down into, polyalcohols and isocyanates. The isocyanates, especially toluene di-isocyanate (TDI), are potent causes of asthma. When polyurethane is burnt off wires, TDI may be released, and this had lead to asthma in a person who tinned compound leads by dipping them in molten solder¹⁷.

Try This Field Strength Indicator

JA HEATH VK2DVH 161 CANBERRA ST ST MARYS 2670



Similarly, the coloured plastic insulation on wires is often polyvinylchloride (PVC), and its thermal degradation products are known to trigger asthma¹⁸, though this has not been reported in electronics situations. The message here is always remove insulation from wires before soldering and do not try to burn it off with the iron (it makes a messy job anyway).

What can be done about it?

Once a person has become sensitized to a chemical, he or she usually remains sensitized to it and will react to it again in the future. This means that, if you become sensitized to soldering, you will find it very difficult to ever do any soldering without symptoms. The only sure way to avoid further reactions is to avoid further exposure. It may be possible to change to another chemical, but often the alternatives are not very different — different brands may actually be identical in composition, or the body reacts to closely related compounds. Once sensitized, it can be very difficult to avoid exposure, even with good ventilation and respiratory protection. The best thing is to minimize exposure in the first place and so minimize the risk of sensitization. For the electronics industry, there are some guidelines, such as the ones produced by the New Zealand Department of Health detail good practice and regular assessments¹⁹.

In the shack, prevention is a matter of commonsense aimed at reducing the amount of fume breathed. Soldering iron bits should be kept clean and replaced when worn. Ensure ventilation in the area, preferably exhaust ventilation or at least moving away from you. If you are concerned about your health, consult your local doctor.

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Technical Correspondence

My article "SWR. A can of worms" (June 1989 AR) was a concerted effort to simplify the subject of antenna matching and to try to remove such theoretica, smoke-screens as reflected power and overheat finals

One error made by me, as pointed out by a correspondent blessed with common-sense was to state blindly that the source impedance had to equal the transmission line impedance for maximum power transfer to occur. Of course, I forgot the same theory states that 1/2 the power generated will then be dissipated by the source (ie, your transmitter) — a fact which all amateurs know to be obviously false

Thus Dr Lucas' glib paragraph on mismatched sources (p11, October '89 AR) must be incorrect, as I was in my article. Reflected power is a very confusing, theoretical interpretation of a simple physical process, which doesn't stand a hard looking into using practical experience

As light displays a "dual" nature (particle or wave?), so energy flow in transmission lines will continue to confuse technical people at all levels

I think I'll stick to my guns and consider only input impedance variations on my transmission lines — that way I can sleep nights!

Anybody else got some thoughts on this?

John Sparkes VK6JX
"Paradise Valley" RMB737
Donnybrook 6239

BT

NZART On 160

Propagation Experiment And Popular 160m Activity

Several New Zealand special event stations (with large aerials for the occasion) will be operating on 160m during Oct 1990. We look forward to many international contacts

Oct 20-21 8pm-4am NZT

Oct 21-22 8pm-4am NZT

1840 kHz and/or 1940 kHz thank you.

David Walker (for Hastings-Havelock North NZART Branch, ZL2BEI)

BT

Have you advised the WIA Executive office of your new callsign?

VLF-LF AND THE LOOP AERIAL

LLOYD BUTLER VK5BR
18 OTTAWA AVE PANORAMA 5041

In the December 1989 issue of "Amateur Radio" we introduced a design for a receiver which tuned the VLF-LF bands, and followed up with further articles on bandwidth control and front end tuning. We now introduce loop aerials as another adjunct to the VLF-LF receiving equipment.

We begin with some theory on loop aerials and how they reduce the level of local noise. Some experiments, carried out by the writer, are described together with a circuit for a loop tuner and pre-amplifier. The discussion extends to the problems of amplifier noise and the advantages of tuning the loop.

Loop Aerial Theory

As discussed in our previous articles, a major problem in receiving VLF and LF signals is the high level of local noise generated from noisy power lines and consumer electrical equipment. In the presence of this type of noise, the received signal to noise ratio can be improved with the use of a loop aerial.

To explain this, we must briefly discuss the fields around a radiating element. At distances up to around half a wavelength, the induction or near field is prominent but it falls away at a greater rate with distance than the radiation field. At distances greater than one half wavelength, the radiation field is prominent. The relationship between field strength and distance is as follows

1. The electric component of the induction field decreases with the cube of the distance and $dB = 60 \log(d_2/d_1)$ where d_2 and d_1 are the relative distances

2. The magnetic component of the induction field decreases with the square of the distance and $dB = 40 \log(d_2/d_1)$.

3. Both the electric and magnetic components of the radiation field decrease directly with distance and $dB = 20 \log(d_2/d_1)$

The effect of all this is that in the near field, the electric component is much stronger than the magnetic component. This is illustrated graphically in figure 1.

At VLF and LF (10 to 300 kHz), we are concerned with half wavelengths between 500 and 15,000 metres and reception of

localised noise is clearly in the induction or near field region. The shielded loop aerial is sensitive only to the magnetic component and since this is lower in level than the electric component in the near field, the level of noise interference is reduced. Furthermore, if the source of interference is from a different direction to that of the signal to be received, the noise is further reduced by the directional properties of the loop. The loop has a very sharp null at right angles to the plane of the loop and it can be rotated to position the noise source at the null.

The equivalent circuit of the loop aerial coupled to a load resistance R_l is shown in figure 2. E_s is the voltage induced into the loop, R_t is the resistance of the circuit (the sum of radiation resistance and loss resistance), L is the inductance of the loop, C is the shunt capacitance of the loop with its cable coupled to the load and E_o is the output voltage across the load.

When the loop plane is in line with the

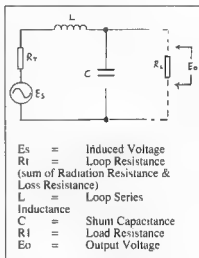


Figure 2. Equivalent circuit of the loop aerial

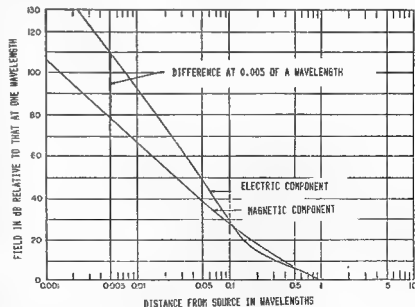


Figure 1. Comparison of electric and magnetic components of received field up to distances of one wavelength from the source

direction of signal for maximum signal level, induced voltage E_s is given by the following formula (valid providing the loop dimensions are small compared to a wavelength)

$$E_s = (2\pi eNA)$$

where E_s is expressed in μV

e = Field strength in $\mu V/\text{metre}$

N = Number of turns

A = Area of loop in square metres

λ = Wavelength of the signal in metres

We can also express the formula in terms of frequency (f) as follows:

$$E_s = (2\pi eNAf)/V$$

where V = Wave velocity ($3 \times 10^8 \text{ metres/sec}$)

From the formula it is clear that the induced voltage is directly proportional to both the loop area and the number of turns and the larger we make either of these, the higher is the induced voltage. However, increasing these also increases the series inductance and shunt capacitance and depending on frequency, their reactances have a profound effect on the actual voltage E_o delivered to the load.

Resistance R_t is also in series with the load but its value is normally low enough to make little difference to the voltage delivered to the load.

Resonance

The loop aerial has a natural resonant frequency at which the reactance of L equals the reactance of C and at which the response peaks such that the output voltage E_o equals the induced voltage E_s multiplied by the Q factor of the circuit. Clearly there is much to gain by operat-

ing the loop in a parallel tuned mode and this can be achieved at any frequency lower than the natural resonant frequency by simply adding shunt capacity across C . At frequencies above the natural resonant frequency, resonance is not possible and good performance is better achieved by decreasing the number of turns on the loop to make natural resonance equal to or above that of the frequency used.

To achieve good performance in a resonance mode at a wide range of frequencies, a number of loop aerials with different numbers of turns, or one with a selectable number of turns, is needed. At low frequencies, a large number of turns is desirable to achieve good signal sensitivity but at higher frequencies a lesser number of turns might have to be used to raise the natural resonant frequency. Referring back to formula (2) we see that induced voltage E_s is proportional to both frequency and number of turns so that whilst we lose signal level with less turns, this tends to be compensated by the increase in frequency.

As the output voltage E_o is proportional to the Q factor at resonance, it is important to make the load resistance R_l a high value to prevent the lowering of Q . This calls for coupling directly into an amplifier with a high impedance input.

Shielded Loop

A multi-turn shielded loop can be constructed in many ways. The multi-turns can be spaced laterally, or in line, or bunched. They all seem to work but the essential requirement is that the shield, whilst fully enclosing the wires, must be discontinuous at one point (usually the loop apex) so that the shield does not form a shorted turn and upset the magnetic properties of the loop.

The writer found a simple way to make a shielded loop using 12 core computer bus cable. This is wrapped in conductive foil and has a heavy drain wire in contact with the foil. The loop of cable, 800mm square, is cleated to two crossed sections of light timber. The ends of the cable terminate at the base of the loop where individual wires are series joined and the drain wire and foil ends are paralleled to what becomes the cold end of the loop winding. At the apex of the cable loop, the drain wire and foil are cut so that the shield is discontinuous.

Measurements on the loop showed that 12 turns gave a natural resonant frequency of 210 kHz, 6 turns a frequency of 450 kHz and 3 turns a frequency of 730 kHz. Inductance measured around 500, 120 and 35 microhenries respectively for the different numbers of turns. As it was required to operate the loop aerial up to

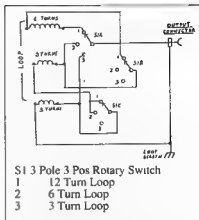


Figure 3. Loop switching circuit.

500 kHz, a switch was fitted at the base of the loop to select either 12, 6 or 3 turns. The circuit arrangement is shown in figure 3. It should be observed that both ends of the unused turns are disconnected when 6 or 3 turns are in use. This is very important because if one end of the unused turns is left connected, the unused turns add extra capacity and lower the resonant frequency.

The loop aerial using computer cable is shown in figure 4. It was assembled as an experimental unit and not intended, in its present form, to be weatherproof.

To resonate the loop, a 12 position switch connects a range of parallel capacitance values up to 0.47 microfarad which enables tuning down to 10 kHz with the 12 turn loop. The switched capacitor circuit is included in figure 5. With this arrangement, Q factors above 50 kHz were within the range of 13 to 20. At lower frequencies, the Q is lower and was measured as 6 at 18 kHz.

The dynamic impedance of the tuned circuit can be as high as 10,000 ohms at certain frequencies and hence the circuit is interfaced with the high impedance input of an operational amplifier. The amplifier is set for a maximum gain of 10 to increase further the signal level from the loop which, even with tuning, produces a much lower signal than that received from a random wire of reasonable length. The amplifier is provided with a switch to reduce its gain to unity in the event of very high signal levels causing cross modulation. This precaution has so far proved unnecessary.

The tuning capacitors and pre-amplifier have been fitted in a separate box so that it can be located at the receiver end of the coax cable which feeds the loop aerial. With this arrangement, the cable capacitance also forms part of the parallel tuning capacitance. At these low fre-

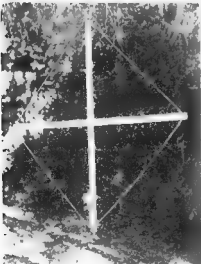


Figure 4. Loop Aerial assembly using 12 core computer cable

quencies, the only effect of this capacitance is to limit the maximum resonant frequency of the loop for a given number of loop turns. Coax cable (such as RG58) has a typical capacitance of around 100 pico-farad per metre. The loop capacitance is around one nano-farad so that a few metres of cable does not make a significant difference. The system can still be satisfactorily tuned with 6 metres of coax cable.

The loop tuning system was used in conjunction with the VLF-LF front-end tuning system and the VLF-LF receiver described in previous issues of "Amateur Radio". The complete equipment is shown in the photograph, figure 6. The loop tuner is on top of the front end unit at the left. The receiver is at the right.

In the loop aerial discussed, switching of the number of loop turns is provided by a 3x3 rotary switch. This must be fitted at the base of the loop and could be inconvenient if the loop aerial were located outside and inaccessible. A relay circuit could be devised which would replace the switch and be controlled remotely at the receiver.

Amplifier Noise

When operating VLF-LF using a wire aerial, the atmospheric noise level received is normally well above the noise floor of the first amplifier and amplifier noise is insignificant. With the loop aerial, the signal pick-up is much lower and when the atmospheric noise level is low, the minimum discernible signal level can be set by the amplifier noise floor rather than the atmospheric noise level. It is therefore important to select a pre-amplifier with a low inherent noise, much as one would do for a VHF or UHF front end.

For the amplifier used in the circuit of figure 5, a Burr-Brown low noise FET operational amplifier type OPA111AM was selected. This is specified as having the low voltage noise figure of 6 nano-volts per root hertz of bandwidth with the negligible current noise characteristic of the FET input circuit. It has a gain-bandwidth product of 2 MHz and hence it can maintain the gain of 10 up to a frequency of 200 kHz with a falling response at higher frequencies down to a gain of 4 at 500 kHz.

Another choice for a low noise amplifier could have been the bi-polar input Precision Monolithics type OP27 amplifier. This has a voltage noise of only 3 nano-volts per root hertz of bandwidth but, having a bi-polar input, there is a current noise component which would add noise when connected across the high impedance tuned loop circuit (reference 2). The amplifier has a gain-bandwidth

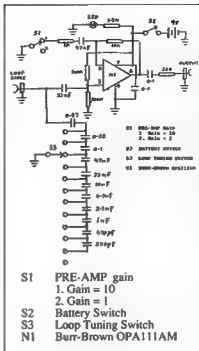


Figure 5: Loop aerial tuning & Pre-amp circuit

product of 8 MHz and hence could maintain the gain of 10 well up to 800 kHz.

A further approach might have been to use one of the low noise MOSFET VHF transistors such as the BF981

Of course, good signal to noise ratio also gets back to the design of the loop for highest possible signal voltage. Recapitulating previous parts of our discussion, signal voltage is increased with more turns or larger area (consistent with natural resonance being not less than the operating frequency) or by designing the form of the loop for the highest possible Q factor.

Loop aerial circuits are frequently published with amplified signal fed back to the loop to form what they call a Q multiplier. This, of course, is a different name for what has been known as regeneration or reaction. Feedback in phase with the input signal raises the effective Q of the circuit to increase its gain and reduce its bandwidth. For the writer's receiving system, feedback in the loop system was not considered necessary as the loop amplifier was coupled into the VLF-LF front end, previously described in "Amateur Radio". This front end, with Q factors up to 200, has itself adequate gain and selectivity.

There is also a disadvantage with using regeneration in that the noise generated by the amplifier is also fed back to be re-amplified. Whilst the regeneration narrows the loop bandwidth and reduces the bandwidth of the incoming noise, it actually increases the level of the amplifier noise within the band.

Some Other Loop Forms

The natural resonant frequency of the loop and hence its upper frequency limit for a given number of turns, can be increased by spacing the wires and spacing the shield from the wires so that residual capacity is reduced. As it turns out, the loop aerial also gives quite good noise rejection without any shield at all. With this arrangement, the residual capacity can be reduced to provide a considerable increase in the upper frequency of the loop.

Another loop aerial assembled by the writer consisted of 20 turns of unshielded wire spaced in line with a separation of 10mm between turns and forming a 0.8 metre square. To achieve the spacing, the wire was wound around four pieces of dowelling fitted through two wood cross pieces. This aerial measured an inductance of about 500 microhenries and had

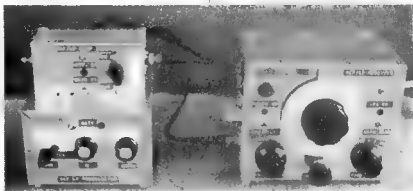


Figure 6: The receiving equipment. The loop tuner is upper left, the receiver front end tuner is lower left and the receiver is on the right.

a natural frequency of several hundred kHz. (The actual frequency was unfortunately not recorded.)

The wire on the 20 turn loop was eventually replaced with shielded wire. Its second form is shown in figure 7. At the apex of the aerial, the shields on each of the 20 wires were cut and all joined together on either side of the cut. The shields were also joined at the base of the aerial and connected to the earth side of the feeder cable. The inductance of this aerial measured much the same as that of the previous aerial with unshielded wire but natural resonance was lowered to 100 kHz. All in all, the performance in receiving signals at VLF appeared much the same as for the unshielded loop. This raises a question whether the shield is much value at these low frequencies where the loop dimensions are very small compared to a wavelength. At these frequencies, there might be merit in using the unshielded loop to take advantage of the higher upper frequency limit achieved.

In a further form of loop aerial, a single turn of large area can be used. Clarrie Castle VK5KL described a single turn loop aerial for 1.8 MHz in March 1962 issue of "Amateur Radio". The aerial was formed by a single loop of around 9 metres of coaxial cable with its outer braid conductor cut at the loop apex. The outer braid thus formed the shield around the inner looped conductor. With lower frequencies in mind, the writer set up such a loop using 9 metres of RG58 and carried out some tests. The resonance measured 2.5 MHz. At 1.8 MHz, the loop resonated with around 500 pF of parallel capacitance and the circuit had a Q factor of 16.

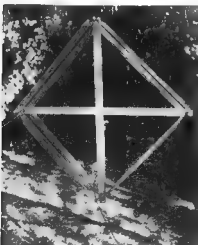


Figure 7: The 20 turn loop aerial wound with shielded wire

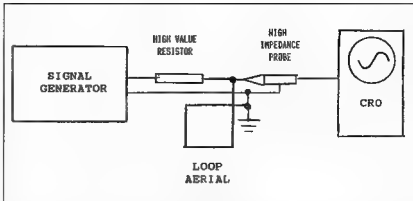


Figure 8: Measurement of loop aerial constants

Clearly, the loop was ideal for this frequency. Below 100 kHz, signal pick up was less than adequate and very large values of capacitance were needed to resonate the loop. This particular loop aerial is clearly a very good form for the MF band but not really suitable for VLF and lower LF. Nevertheless, it was another interesting experiment to find out what would work at the lower frequencies.

Measurement Of Loop Constants

At this point, it might be useful to explain how the loop constants were measured. Having constructed a loop aerial, we need to know its natural resonant frequency and its self inductance so that the maximum tunable frequency can be determined and the capacitance values worked out for the tuning range required. These factors can be measured using a signal generator fed via a fairly high resistance (say 10 k ohms) to the loop as shown in figure 8. More than one signal generator might be needed to tune from VLF to MF. The voltage across the loop is monitored on a CRO (or perhaps a VTVM) via high impedance probe. The signal generator frequency is adjusted for a peak in voltage at which the natural frequency is indicated. We now add a large capacitance (at least 20 nano-farad) sufficient to make the loop capacitance insignificant by comparison and retune for a peak at the new lower frequency. Inductance is then calculated from the normal resonance formula (or a resonance chart), using the parallel capacitance as the formula (or a resonance chart), using the parallel capacitance as the value of C and ignoring the self capacitance of the loop as this makes little difference to the accuracy of calculation.

Having measured the self resonant frequency and calculated the inductance,

the loop self capacitance can also then be derived from the resonance formula.

As a further operation, Q factor can be measured using the same equipment except that the resistance in series with the signal generator must be increased to around 100 kohms to prevent the Q being lowered by the signal source. With extra signal loss across the resistor, a high signal level and a sensitive CRO are needed. The procedure is simply to measure the frequencies, either side of resonance which give 0.707 of the voltage at resonance. Q factor is equal to the resonant frequency divided by the difference between the two frequencies recorded. Q factor at a range of frequencies can be carried out by varying the value of the shunt capacitor to obtain resonance at each of the frequencies.

To go one step further, we can now calculate the AC resistance of the loop (R_t) at any frequency for which we have derived Q. The inductive reactance at that frequency is calculated from $2\pi fL$ and the reactance is then divided by Q to obtain R_t . We now know all the constants R_t , L and C, as shown in figure 2.

Performance

Whilst the level of its signal pick up is low compared to the long wire aerial, it has been clearly demonstrated in the writer's experiments that the loop aerial can separate out signals in the presence of localised noise which overrides the signal on the long wire. As with any directional aerial, it also improves the signal to noise ratio for atmospheric noise by restricting noise received, in particular from a direction at right angles to its plane.

Surprisingly, this performance could be achieved with the loop aerial sitting on the cement floor of the writer's shack, which happens to be clad in sheet iron. With a suitably designed loop aerial and a highly selective front end tuning sys-

tem, good signals at VLF and LF can be received indoors, right down to 10 kHz. This is gratifying if one does not have room for an outdoor aerial. Of course there are the odd traps. It is very easy to miss a signal if it happens to arrive from a direction close to the null of the loop. It is also very easy to home in on some inside based signal source such as the writer's frequency counter.

Untuned Loop

Discussion has been centred around loop aerials, tuned to resonance and giving output voltage as in formula (1) or (2) multiplied by Q. However loop aerials can also be operated in a broadband mode and a design procedure for doing this over a range of frequencies is described in April 1989 issue of "Lowdown". The procedure is to load the loop aerial into a fairly low resistance, at the pre-amplifier input, equal in value to the loop inductive reactance at the lowest frequency of the frequency band required. Parallel resonance is set to a frequency calculated from the geometric mean of the lowest and highest frequency required. According to the article, the design produces a

loop response which is flat with frequency.

Whilst the broadband loop eliminates the complication of loop tuning when changing frequency, the loss of Q multiplication can drop atmospheric noise below the noise floor of the amplifier thus limiting the sensitivity to weak signals. As an example, if we apply formula (2) to the 12 turn 0.8 metre square loop described and use a typical atmospheric noise for 100 kHz, which can be around 0.2 micro-volts per metre per root hertz, we get a loop output voltage of 3.2 nano-volts per root hertz. This output level is barely comparable with equivalent input noise voltages at low impedance of the best of amplifiers.

Conclusions

A properly designed loop aerial system, with a low noise pre-amplifier, is a useful part of the VLF-LF receiving equipment and can enable signals to be picked out from noise which otherwise overrides the signal from the wire aerial. It also provides a means to obtain good signal reception at VLF-LF without the use of a large aerial installation usually considered necessary for low frequency

reception.

The signal level received from the loop aerial is low compared to the wire aerial and the signal to noise ratio can be limited by the noise generated in the first amplifier. To minimise this problem, a low noise pre-amplifier is used and the loop circuit is tuned so that the signal level into the amplifier is multiplied by the Q factor of the loop circuit.

Some experimental loop aerials and a loop tuning and interface circuit have been described. Operated in conjunction with the high Q front end tuner, previously described in "Amateur Radio", they have provided impressive performance when everything is carefully tuned up.

References

1. Direction Finding (Loop Aerials) — Admiralty Handbook of Wireless Telegraphy, Section T.
2. Lloyd Butler VK5BR — Amplifier Noise — Amateur Radio, November 1982.
3. Analysis & Design of Broadband Low Frequency Loops — Lowdown, April & May 1985.
4. Castle, C. H. VK5KL — A 10ft Diameter Receiving Loop on 1.8 MHz — Amateur Radio, March 1982.

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Technical Correspondence

Experimental Communications in the LF Band

Several of my recent articles have been concerned with receiving equipment for the VLF-LF bands and this has led to my taking quite an interest in what sort of activity occurs on these bands. There are certainly plenty of enthusiasts interested in listening on the low frequencies but there are also others who actually transmit signals and communicate with each other.

Low frequency experimentation does not seem to get much attention in the Amateur Radio magazines or in the Amateur Radio handbooks but there is an organisation called "the Longwave Club of America" which publishes a journal called "Lowdown". A number of copies of these have been kindly lent to me and they are certainly packed with plenty of low frequency information including transmitters, aerial systems and comprehensive lists of transmitted signals which can be heard on the bands.

The lack of information in amateur radio publications is probably due to

the fact that there is no official amateur radio band allocation at the lower frequencies. In the USA, transmission can apparently be carried out in a frequency band between 160 and 190 kHz by any citizen subject to certain FCC rules. These rules specify that the input power to the final transmitting radio frequency stage shall not exceed one watt and that the total length of the transmission line and antenna shall not exceed 15 metres. There does not appear to be any other restrictions, such as mode of transmission, or operating procedure except that emissions outside the band shall be suppressed by 20 dB below the modulated carrier level. One watt input represents a fraction of a watt radiated using the limited length of antenna one would have in the suburban house allotment and in any case, restricted by the rules to 15 metres. Notwithstanding this, experimenters have been able to communicate and have their beacons heard at quite some distance, using this low power.

There has also been low frequency activity on the Australian scene. In "Amateur Radio" July 1984, an article by John Adcock VK3ACA was published on LF experimentation. John describes how he and Peter Forbes VK3QI (and later Dennis Sillette VK3WV) applied for, and were granted, an "experimental Licence" to operate amateur radio type of equipment in the LF band. A frequency of 196 kHz was approved and the article deals

with the transmitting and aerial equipment John used on this frequency and some of the results obtained.

Clearly, the input power to the final amplifier was more than one watt (John used a pair of 6J56S in the final) and signals from Melbourne were heard as far away as north of Newcastle and in the Flinders Ranges.

The question is whether there is any of this LF communications activity still going on in Australia today. Perhaps someone can provide some further information on this question.

Lloyd Butler VK5BR
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Panorama 5041

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**Support the
WIA in order
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amateur
radio
frequencies
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THE YAESU-FT 1000 HF ALL MODE TRANSCEIVER

RON FISHER, VK3OM

Once upon a time (and this isn't the start of a fairy story) if you wanted an HF transceiver, you bought a Yaesu. Why? Because there wasn't much else about. These were the days before Icom and Kenwood had really appeared on the market, they were relatively expensive, and most of the operating aids were optional extras anyway. Along came Yaesu, and all the extras were built in. Cast your mind back. Transceivers like the FT-101 and the FT-200 were the ones that everyone had, and further more, they are mostly still going strong. These were followed up with famous models like the FT-101Z, the FT107 and, of course, the best known of them all the FT-7. Then to my way of thinking, things started to go slightly wrong. Over the last five or six years, Yaesu hasn't been a big name in HF transceivers. It seems that this is likely to change in the near future.

Enter The FT-1000

So just what is the FT-1000 and how will it change the Yaesu image? Read on...

The FT-1000 is Yaesu's flag ship. It's the front runner against such transceivers as the Kenwood TS-950S and the ICOM IC-765. The FT-1000 is a brand new transceiver, unlike the other two, which are continuations of popular and successful models. Let me say, that I was most impressed with the new model. Yaesu are off on the right track.

Features Of The FT-1000

Like the other transceivers in this class, the FT-1000 is big and heavy. It has all the features that are expected in a top line transceiver which has been designed to go into the 1990s, so let's go into detail. This rig is AC operated only. Even if you could run it from a battery (you can't), you would need a large bus to get it anywhere near the driver. The overall size is impressive. It measures 420 mm wide, 150 mm high and 375 mm deep. It weighs in at a massive 25.5 kg, which makes it the heaviest transceiver on the market. However, this extra weight is needed, because the FT-1000 also has the highest power output — just above 200 Watts. If you stuck to the letter of the law, you won't need a linear. 400 Watts would



The Yaesu FT-1000 all mode HF transceiver

give you only about half an S point more signal at the other end. Of course, the FT-1000 has two receivers which can be used simultaneously over a wide frequency split, or over any split if the optional receiver front end filter (BPF-1) is installed.

Both VFOs have excellent tuning controls with fly-wheel weighted knobs. Naturally, the receivers have full general coverage range with 100 kHz to 30 MHz reception capability. The output from each receiver can be either split between each ear, or mixed to both ears with stereo headphones. However there is only one loudspeaker with a single audio channel feeding it. The digital readouts are exceptionally clear and easy to read. Frequency resolution is 10 Hz on the main VFO, the sub VFO and the receive and transmit clarifier. A read-out also indicates which of the 99 memory channels is selected. Metering of receive and transmit functions is via a large and clear analog meter. Metering functions include, S meter, ALC, compression, power output, SWR, final collector current, and final amplifier voltage.

The transmitter power output position gives a very accurate reading on steady RF power, but unfortunately is not designed to give proper reading of PEP output.

In addition to this, there are several status indicators for such things as mode selection, VFO selection, transmit, main

receiver busy and sub receiver busy. On the lower panel, status indicators show operation of the processor, noise blanker, notch filter and the audio peak filter used for CW reception. While on the subject of CW, the FT-1000 has a built-in electronic keyer, and is compatible with both packet and RTTY operation. As far as I can see, it lacks only one facility. There does not appear to be any provision for a voice frequency read-out. Our sight-impaired amateurs might have to wait for the FT-1001.

One of the outstanding features of the FT-1000 is the use of Direct Digital Synthesizers. While direct synthesis has been around for quite a few years, it is only just finding its way into the amateur field. If you are used to a normal synthesized transceiver or receiver, then you should try a direct synthesized rig and note the difference. I will cover this later in the "On Air section".

To explain direct digital synthesis a little better, I would like to quote from an article in Ham Radio for October 1988 by Robert Zarvel W7SX:-

"The direct digital synthesizer has arrived in amateur radio. In the past several months DDS state-of-the-art has progressed to the point where good radio performance is obtainable using DDS. The DDS offers some attractive features over the analogue or phase-locked loop (PLL) synthesizer. DDS is digitally con-

trolled. Tuning is regulated by either memories or counters which, in turn, are controlled by rotary optical couplers. Unlike the PLL, DDS doesn't use a vco, loop filter, phase detector, or digital divider and prescaler. Waveform information is generated using digital information only. The last step uses a digital-to-analogue converter (DAC) to generate the rf signal"

In the QRM reduction department, the FT-1000 is right up there with the best of them. Firstly, the Shift/Width controls allow the overall band-width while in all modes, except FM, to be adjusted to suit the prevailing conditions. A notch filter is there to take out those persistent tuners-uppers. IF filters are included for bandwidths of 250, 500, 2K and 2.4 kHz, with a 6 kHz filter for normal AM reception. The FM mode is also provided with a suitable band-width filter.

On the transmit side of things, the quality of the output signal has had special care. The final output transistors are powered from a 30 volt rail for low inter-modulation distortion, and coupled with the Direct Synthesis, the transmitter has an exceptionally low noise output. An RF speech processor is available for SSB transmission.

The FT-1000 On The Air

The FT-1000 is very easy to get on the air. Most of the normal functions really don't even require reference to the instruction book. Each of the amateur bands can be selected via the dedicated "Band" button, or an exact frequency can be entered from the key pad. If you wish to enter a frequency into the sub receiver, this can be achieved by pressing the "Sub" button, then entering the required frequency. In its standard form, the sub receiver only operates in the same band as the main receiver. The actual offset depends on the width of the filter provided in the front end. Once beyond this, the sensitivity drops about 50 db. Unfortunately, the optional BPF-1 receiver bandpass filter module was not supplied. With this installed, a separate receive antenna can be connected to provide up to 29.5 MHz frequency separation between the main and sub-receiver.

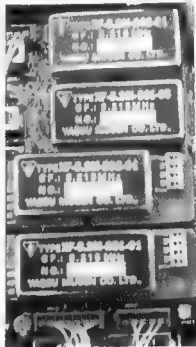
Being something of a short wave listener, I was keen to try out the receiver in the AM mode, and here was the first revelation. There are absolutely no clicks, pops and holes that you hear on the normal synthesized receiver. It tunes just like the old FRG-7, although it's there that the comparison ends. The selectivity on AM is very tight and thus audio quality a little lacking in high frequency response. However the audio appeared to be very clean. While normal synthesized



Right hand front. Note the large tuning control for the sub-receiver and the keyboard for frequency selection and direct amateur band selection

receivers don't show up with as many pops and clicks on SSB as they do on AM, the FT-1000 was notably clean in this mode too. Frequency read-out and stability were checked against the BBC and Radio Australia on the 21 MHz band, and found to be within 5 Hz. An excellent figure. The control system for the two receivers is very simple and user friendly. A single button places the sub-frequency into the main receiver and vice versa. Band change for the amateur bands as mentioned earlier, is easily accomplished via the individual "Band" buttons. When using this method, the actual frequency, previously used on each band will be brought up, and not the same decimal frequency, as most of the older generation of transceivers will do. The frequency "UP/DOWN" buttons move the tuning up or down in 500 kHz steps, with the "down" and "up" button producing this effect each time the button is pressed. Listening to two different signals at the same time must be an acquired taste, but plugging in a pair of stereo headphones produces some startling effects. I thought it rather a pity that Yaesu didn't provide two audio output channels for the receiver, so that two speakers could be used, say on either side of the transceiver, to give some separation between the two receivers. Sometimes, with the audio coming out of one speaker, it's rather hard to tell which signal is which.

Received quality on SSB was found to be very clean, with product detector distortion measured at only 1.1% distortion, but again just a little lacking in high frequency response for my test. A microphone was not supplied with our review



Close up of the Crystal Filter section
transceiver, but I did have a Yaesu MH1B8 on hand, which was used for all of my on-air tests. Reports were all very favourable, especially when using the speech processor. It seemed capable of taking a large amount of compression without producing any audible distortion. With over 200 Watts output available, you have the choice of two ways of running the transceiver. Firstly, run the

full power output without a linear and get a clear, clean and penetrating signal. Or secondly reduce the output to about 50 Watts and drive your linear to 400 Watts output, but with an exceptionally clean signal. I estimate that at 50 Watts output, the intermodulation distortion would be well in excess of -40 dB.

CW keying was a delight. You can connect either a straight key or a paddle, and full QSK operation is available. The keyer dot/dash weighting is fully adjustable via the DIP switches under the top panel hatch, as is the pitch of the received signal. A useful feature is the PLL spotting LED to let you know when you are on frequency.

With 99 memories to play with, I was anxious to load up a few of my favourite broadcast stations on both the standard and short wave broadcast bands. Getting them into the memory was easy. I even programmed a few on USB or LSB to eliminate an interfering signal. So far so good. With a couple of dozen in, I decided to scan around them to see what I had. The memories can be selected manually with the memory up/down selector knob.

The main tuning control is large and very smooth in operation. It reminded me of the tuning control on my old TS-930, but if anything, is a little better (that's saying something). The tuning rate is 10 kHz per knob revolution, and the tuning rate does not speed up if the knob is rotated quickly. Instead, there is a fast button just to the lower left of the main control. With this depressed, the tuning speeds up to about ten times the normal rate. However, it is necessary to keep this button depressed to produce the effect. By the way, with the AM mode selected, the tuning rate changes from 10 Hz steps to 100 Hz steps and gives 100 kHz per dial revolution. This rate is also automatically selected in the FM mode.

Ten metre FM operators are well catered for with a selectable repeater offset facility. During my test, the ten metre band was in rather poor shape and contacts on FM hard to get. However the transmitted and received quality were judged to be very good.

If you are one of the growing band of digital mode enthusiasts, then the FT-1000 is just the thing for you. Dedicated sockets are provided on the back panel for connection to a packet TNC or RTTY and AMTOR terminal unit. The FT-1000 has a built-in microprocessor to control the audio frequency shift keying tones for RTTY or AMTOR and a choice of shifts is available.

Of course, the entire rig can be controlled from your computer, and several pages of the manual are devoted to this. One page notes all of the CAT commands

available, giving their Opcodes and parameter Bytes. As with all upmarket transceivers, the FT-1000 has a built-in automatic antenna tuner. The specification states that this is able to match an impedance of 16.5 to 150 ohms; in other words about a three to one SWR on an unbalanced line. You should note that this ATU is not suitable to feed random length or unbalanced antenna systems. The ATU settings are stored in their own memory system for instant recall when your favourite frequency is selected. The auto ATU can also be controlled via the external computer input if required.

One of the interesting options offered

with the FT-1000 is the DVS-2 digital voice system. This allows recording and replay of either off-air or ex-microphone material. I know that Yaesu have offered this as an option on some of their VHF FM transceivers over the last year or so. As yet, I haven't had a chance to try one I look forward to the opportunity to do so.

With 200 Watt output capability, the chances of things heating up somewhat are possible. A high volume fan is installed inside the finned heatsinking. I must say that I was somewhat taken aback when it first started up. For the first few seconds it sounds like a cow mooing. However when it settles down it's not too bad but nevertheless produces a little more noise than I consider acceptable.

The FT-1000 On Test

Firstly, the receiver was tested for audio output and distortion. The external speaker output socket was terminated with both a 4 and 8 ohm load.

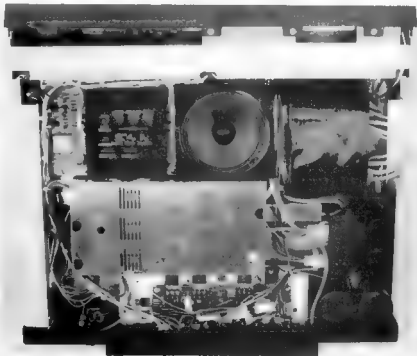
8 Ohms 1.9 Watts maximum output

4 Ohms 2.4 Watts maximum output

With a 1 kHz beat note, SSB mode on 14.2 MHz the following distortion was noted:



Close up of meter



Top view of transceiver. Note size of power transceiver on right and top controls accessible through top hatch.

4 Ohms .5 Watts output. 1.1%
4 Ohms 1.5 Watts output. 10%

The notch filter was checked, and the maximum attenuation at both 1 kHz and 2 kHz was found to be 27 dB. The input signal was reading about S8 on 14.2 MHz.

The receiver response was measured with the 2.4 kHz filter in circuit.

190 300 500 1 kHz 1.5 2.0 2.4 2.7
-6 04 0 0 -5 03 -6 -14dB

AGC was checked

Slow, 4 seconds decay time from S9

Medium, 3 seconds decay from S9

Fast, 1 second decay from S9

When the signal level was raised from 1 μ V, the audio output increased less than .5 dB.

The "S" meter calibration was checked:

S1	2	3	4	5	6
2 μ V	3 μ V	4 μ V	5 μ V	7 μ V	10 μ V
7	8	9	+20	+40	+60
25 μ V	40 μ V	100 μ V	1mV	10mV	60mV

This was measured at 14.2 MHz, but a quick check on other bands showed that the overall S meter sensitivity was within 2 dB. The above figures were taken with

the preamp switched in. I was unable to check the attenuator as the 6 and 18 dB positions were in-operative in our review transceiver.

The overall sensitivity was checked at 14.2 MHz in USB mode and with 2.4 kHz band-width to give a 10 dB S/N ratio. It measured .25 μ V (without preamp). Again the overall sensitivity remained very constant from band to band.

The transmitter power output was checked in the CW mode and found to be well in excess of 200 Watts on all bands, with the highest on 20 metres (215 Watts), and the lowest on 160 metres (204 Watts). The PEP output on SSB appeared to be a little higher than the above figures.

The FT-1000 Instruction Manual

The quality of printing and presentation of this book is the best that I have seen, and it was obviously written by an author well versed in the English language.

It covers all aspects of operation and also the installation of the options. However, there is almost no technical information provided, apart from the specification. As Yaesu are using many new techniques in this transceiver, a short description of their operation would have been welcome. No doubt a full workshop manual will be available in the near future, and I look forward to seeing this.

The FT-1000 Conclusions

In general, the technical operation of the FT-1000 is superb. The direct digital synthesizer works very well and produces receiver performance that sets new standards. The transmitter delivers more

power than almost any transceiver since the old days of the FTDX-400 series, but with an infinitely cleaner signal. Only one thing is needed when Yaesu brings out its improved FT-1000, a voice frequency readout is required for sight-impaired amateurs. With two frequencies to look at, this might be a complicated device. Dick Smith has discussed this with Yaesu which has advised that, due to complexity, such a speech device would entail so much additional circuitry that the cost of the transceiver would be substantially increased. However, the CAT (Computer Aided Transceiver) facility allows access to the main microprocessor data relating to almost all front panel control parameters. As most visually impaired operators would already have a computer available, it would not be a difficult task to investigate the possibility of connecting the computer to the transceiver.

The "in" thing these days is to quote the number of knobs and buttons on the front panel of a new transceiver. I haven't done that (there are plenty of them) because the layout and functions are very user friendly.

At a price of \$4995, with a Yaesu MD-1 desk microphone, and with the Dick Smith two-year warranty, the FT-1000 represents unbeatable value. I look forward in time to see what becomes available from Yaesu to replace the now ageing FT-757 transceiver. If the photos that I have seen in the latest Japanese magazines are an indication, we are in for a few surprises. It really seems that Yaesu are back in the HF transceiver market.

Our thanks to Dick Smith Electronics for the loan of our review transceiver. All enquiries should be directed to their nearest store. ar

New WIA logbooks available now

at your Divisional Bookshop

These quality logbooks are available in A4 format with plastic spiral binding so the book will open and lie flat on the bench.

VERTICAL OR HORIZONTAL column layout is optional, with the traditional column headings

Price is \$5.00 each plus post and packing where applicable

Regulations Governing Amateur Stations In Australia

Every radio amateur should by now have obtained a copy of two DOTC booklets to ensure they're aware of the latest regulations.

The free booklets are DOC71 "Licence Conditions and Regulations Applicable to the Amateur Service" and DOC72 "Amateur Service - Operating Procedures". A third booklet in the series DOC70 contains the information needed for prospective amateur operators. All amateur regulations examinations are now based on the contents of the three booklets.

Whether you're already licensed or intend to take out an amateur licence in the future, you should have copies of these booklets. They can be obtained free of charge by applying to the State Manager, Department of Transport and Communications, or to your local District Radio Inspector. Their addresses and phone numbers are in the telephone directory and the 1990 WIA Call Book.

AT

BOOK REVIEWS

AMATEUR BAND PLANS BOOKLET

REVIEWED BY JIM LINTON VK3PC

To accommodate both CW and telephony in amateur bands, gentlemen's agreements were drawn up many years ago as the hobby of amateur radio self-regulated use of its bands. In Australia, that was the method adopted in a commonsense approach to achieve harmony between the brass pounders and phone operators. The band plans have evolved over the years to accommodate new modes, specialist uses and repeaters.

While the radio amateur, through the Wireless Institute of Australia, gets a say on band planning, such is not the case in many other countries. In the USA, for example, they have chosen to regulate band

usage. No matter what method is used, the aim is promotion of orderly operation and accommodation of the various modes of transmission. However, band plans have to be readily available in a form easily understood, to ensure the average radio amateur can strive to abide by them.

The WIA has published a neat 38-page booklet explaining the philosophies behind band planning, and how to interpret published plans. Definitions are included to explain terms such as Primary Service, Secondary Service, Narrow and Wide Band modes. A brief explanation of all the radio service types like Fixed, Mobile and Radiolocation mentioned in the book-

let would also have been helpful to readers. A similar comment can be made about the lack of adequate definitions for terminology such as "DX Window" and "Weak Signal Working". The booklet contains, in graphical and tabular form with explanatory notes, the band plans from 1.8 MHz through to 241 GHz. These are clearly presented and easy to understand.

The WIA Federal Technical Advisory Committee deserves commendation for producing this booklet which is recommended for the in-shack library of every active radio amateur. Copies are available from the WIA Federal Office. Cost is \$2.80 posted. **ar**

MORSUM MAGNIFICAT

REVIEWED BY ALAN SHAWSMITH VK4SS

It is almost certain that most VK amateurs have not heard of the magazine "Morsum Magnificat".

"MM" as it has become affectionately known is produced quarterly by Tony Smith G4FAI and Geoff Arnold G3GSR and published in Britain. It aims to provide international coverage of all aspects of Morse, past, present and future.

Morsum Magnificat is for all enthusiasts, amateur or professional, active or retired. It brings together material which would otherwise be lost to posterity, providing invaluable source of interest, reference and record relating to the traditions and practice or Morse — Not forgetting many humorous interest stories.

As most readers know, many magazines have a life span of only a year or two "MM" is still expanding after 8 years. Every "brasspounder" has at least one good story to tell. After reading "MM" you will want to share yours with "MM" readers. It's a hard magazine to put down.

Subscriptions: Issues Nos 17-20 (Autumn 1990-Summer 1991),

United Kingdom: £8.00 per annum, post paid.

Europe, including Eire £8.50 sterling
Other Countries Surface Mail

£8.50 Sterling (or US \$14.00 cash)

Air Mail — £10.50 Sterling (or US \$17.00 cash)

UK cheques payable to "G C Arnold Partners' Payment by Access, Eurocard, Mastercard or Visa also welcome; quote your card number and expiry date.

Owing to bank charges for currency exchange, overseas cheques, drafts, money orders, etc must be drawn on a

London clearing bank and payable in Sterling.

Editorial And Subscription Offices:
Morsum Magnificat, 8A Corfe View Road, Corfe Mullen, Wimborne, Dorset BH21 3LZ, ENGLAND. Telephone: Broadstone (0202, 658474).

Editor: Geoff Arnold G3GSR
Consultant Editor: Tony Smith G4FAI
1Tash place, LONDON N11 1PA, ENGLAND Tel. 081-368 4588. **ar**

How To Run Your Own TV Station

(Or The Media Gets It Right)

That's how Channel Ten, Brisbane approached a brief program on Amateur Television. The segment was shown in prime time at 6.30 pm on the Anna McMahon Show on Friday April 13, and featured several members of the South East Queensland ATV Group. It was taped at the home of Richard VK4XRL and showed pictures transmitted from six other amateurs. Reporter, Mark Suleau compared the differences between commercial and amateur TV.

Viewers were told of the importance of the technical side of the hobby, and the need to be licensed. Richard pointed out how most equipment was home made.

ATVers consider the program a major coup for the hobby, and were impressed with their treatment, saying Channel Ten gave a fair and accurate report on the operation of Amateur TV in Brisbane.

Peter Jones VK4YAC President SEQATV Group

ar

AMATEUR RADIO IN THE USSR

THIS IS THE FIRST OF A TWO-PART ARTICLE WRITTEN FOR THE WIA JOURNAL, AMATEUR RADIO MAGAZINE, BY YURY ZOLOTOV UA3HR, A PROMINENT MEMBER OF THE USSR FEDERATION OF RADIO SPORT.

The amateur radio movement began in the early 1920s along with the commencement of radio broadcasting. The first broadcast station went on air in Moscow in 1922. Regular broadcasts then on the long and medium waves only began from October 12, 1924. At about the same time, a movement of radio amateur enthusiasts sprang up in the country. Many began to build radio sets themselves. In those years more than 80 per cent of sets operated by the population were home-made. On August 7, 1924, the Society of Radio Amateurs of the Russian Federation was set up, later renamed the Society of Radio Friends. In 1926, with the setting up of similar societies in other republics, the first nationwide congress of such societies met. At that time there were over 200,000 radio amateurs in the country. The congress decided to take action to spread the knowledge about radio among the population.

In 1922, radio amateurs in the US, France, Britain and Germany began using shortwaves, then considered useless for radio communication. An intercontinental link on shortwaves between US amateurs (1MO) and France (8AB) was a sensation. Soviet radio amateurs took up shortwave activity with great enthusiasm. The first to build a shortwave amateur radio station in the Soviet Union was Fedor Lbov, an accountant by profession. On January 15, 1925, he and his friend V Petrov went on air in the 96-metre band. For a while they sent Morse: CQ CQ CQ de R1FL pse kkk. The callsign had been invented by them. R1FL stood for Russia First Fedor Lbov. The transmitter had a capacity of 15 Watts and, because they had no receiver, the station's address was transmitted in the hope of reception reports. Two days later, Lbov received a telegram from Iraq where an English radio amateur (G6HS), at the time in Iraq, picked up the signals of the R1FL.

Government encourages shortwave experiments

Soon after this history-making event, the Soviet Government gave official permission for radio amateurs to build and operate their own shortwave stations. In 1927, the first nationwide competitions

in shortwave communications were held, mainly on the 20-metre band. Then, in the following year, the first international radio communication competitions were organised. Soviet and Spanish radio amateurs set up links on shortwaves. That was a time when Arctic exploration began on a wide scale. It was radio amateurs who introduced shortwave communication into that area of activity.

On May 25, 1928, the airship Italia crashed in the Arctic while carrying an expedition of Umberto Nobile to the North Pole. It was not until June 3, when an SOS was picked up by a Soviet radio amateur N Schmidt, that the location of the disaster was known. He immediately passed on to Moscow the co-ordinates of the survivors' camp. The Soviet ice-breaker Krasin went to the site and lifted seven to safety.

In 1937 the first Soviet scientific expedition led by Ivan Papanin was landed on the North Pole, consisting of four men including radio operator Ernst Krenkel. The callsign of the drifting station UPOL won unusual popularity around the world.

Later on, for his services in saving crew members from the ice-crushed steamer Chelyuskin, Krenkel was allowed to use for radio amateur activity the Chelyuskin call letters RAEM.

Hero Krenkel inspires Soviet youth

Krenkel had become a national hero. Many thousands of youths and girls followed his example, taking up radio and studying Morse code. The Krenkel Central Radio Club has a memorial work station of this legendary shortwave enthusiast, outstanding polar explorer and public figure.

In the early 1930s, Soviet radio amateurs began using the then so-called ultra high frequencies. Several dozen articles on equipment and specifics were published.

War stops amateur radio activity

In the autumn of 1939 amateur stations in Britain, France, Poland and Canada went off the air due to the outbreak of World War II. They were fol-

lowed by radio amateurs in Australia, New Zealand, India, Belgium, Norway, Sweden and many other countries.

Soviet amateurs remained active up to the summer of 1941. It was only the perfidious attack by Nazi Germany on the Soviet Union that put an end to amateur radio activity. The Soviet Union entered the war. In the first days thousands of radio amateurs joined the Red Army, becoming officers and soldiers of communications units.

After the war, as a tribute to war veteran radio amateurs, they were allowed callsigns that had only one letter in the prefix. Some 500 of these veterans survive today.

On May 2, 1945, on the eve of the Soviet Union victory over Hitler's Germany, the Soviet Government instituted Radio Day as an annual holiday. This was done as a recognition of radio amateur activities, and as a token of the need to develop radio-electronics as one of the significant and effective forms of public work.

Radio amateurs play role in post-war era

In March 1946, the Central Radio Club of the USSR was set up in Moscow — a centre for amateur radio sport and design. That marked the beginning of a new, post-war period in the amateur radio movement.

In the next decades, radio amateurs have joined in intensive scientific and technological programs in radio-electronics. New technologies and new components not only helped to upgrade amateur equipment, but also gave rise to entirely new activities.

The launching on October 4, 1957, of the first artificial Earth satellite, carried out in the Soviet Union, heralded the use of future satellites for amateur communications in the RS1-RS11 series.

Organisation and IARU involvement

On October 8, 1959, the USSR Federation of Radio Sport was set up. Its presidium has committees and commissions on various radio amateur and radio sport activities.



Alla and Yuri Zolotov - famous Moscow radio amateurs. Photo shows the Zolotov couple at home in their radio studio. They are holding their QSL cards.

In its work, the Federation draws extensively upon the Krenkel Central Radio Club of the USSR.

Local radio sport federations based on radio clubs are also set up in the various autonomous republics, territories and regions throughout the USSR. Since 1962, the USSR Federation of Radio Sport has been a member of the International Amateur Radio Union, and takes an active part in the work of the IARU Region 1.

The Federation, the USSR Central Radio Club and the magazine Radio hold annually several nationwide shortwave competitions, three USSR championships and the international CQ-M Contest, whose motto is "Peace to the World".

The CQ-M Contest began in 1957, and now traditionally takes place every year in the second week of May. All foreign participants get souvenir badges. Once in three years, the USSR Federation of Radio Sport, on behalf of the IARU Region 1, holds international competitions in shortwave telegraph communications, to contest the cup of the first cosmonaut Yuri Gagarin.

(To be continued in a later issue.)

TRIAL EXAMINATIONS AVAILABLE

Candidates for amateur examinations can now be better prepared and confident by testing themselves with a trial examination. No matter where a candidate is in Australia, they can obtain a trial theory or regulations examination by mail order.

The questions used in the trial papers are typical of those in the "real" examinations. The candidate attempts the trial paper under examination conditions in their own home and then returns the answer sheet for marking. The marking is part of the service and readily helps the candidate identify those areas of weaknesses which need more study.

The cost of the theory trial examinations (specify whether you want the Novice or AOCF version) is \$12 while the regulations paper is \$8.

Applications should be sent to:
Trial Examinations
WIA Victorian Division
38 Taylor Street
Ashburton Vic 3147

"AHH, YOSHI- WOULD YOU REPEAT ALL BEFORE.
'WAKARIMASUKA, DOZO?'"



— VK2COP

GEORGE MOSS VK6GM — PIONEER RADIO AMATEUR

LES BRADSHAW VK6EB
203 THE STRAND, BEDFORD 6052

George Arthur Moss joined the Western Australian Division of the WIA in 1925, and is currently its longest standing member. Born 2 September 1903, George first became interested in communications at the end of WWI. He has pursued radio as a hobby and career since that time, and is still actively associated with the social, construction, and operating aspects of amateur radio.

Amongst the memorabilia in George's possession is an early textbook "Aerodynamics", published in 1908. Contained within the preface is the statement, "In the future it is unlikely that the flying-machine will be limited in performance to short flights over prepared ground at a few metres height, ready to come to earth at a moment's notice; it will rather seek safety in altitude, probably flying in the most part at a height of at least two or three thousand feet."

It was from a British periodical "Work" published in the same year as the aviation text, that George as a 16 year old school boy was to gain his introduction to wireless. While browsing through some back issues of the magazine, to which his

father subscribed, he came across an article describing the construction of a spark transmitter, and coherer detector — receiver. The innovative feature of the design was an electric bell type mechanism, which rapped the coherer in order to disorientate the iron filings in the column, to ensure continued operation.

Construction of the equipment was not attempted, since it was both illegal and beyond his means at the time. George's father however, sensing his son's newborn interest in electricity, brought home some discarded Hellsen dry cells, which had been used to power the ignition system in a motor vehicle used by his employer. Experimentation followed, with the cells providing the supply for a variety of simple circuits. Having no electrically minded friends to consult, and with the scarcity of suitable literature at the time, the assimilation of a theoretical background in these early years was a slow and difficult process.

After obtaining his school Leaving Certificate and doing a further year of study in a commercial course, George obtained employment in 1921, with a firm specialising in piano maintenance

and tuning. His mastery of the art of tuning was materially assisted by his recently acquired knowledge of beating frequencies. Two years later he built his first wireless, a crystal set, in order to receive the 9PM time signal and weather report from the Perth coastal radio station VIP. The station operated a spark transmitter on 600m. An experimental licence costing 10 shillings had to be obtained from the PMG Department, Melbourne, in order to build the crystal set.

Following this first successful construction, numerous requests were received to build crystal and valve receivers, due to publicity given to the opening of 6WFF the first public broadcast station in WA, on 4 June, 1924. At this time an experimental licence limited the building of equipment for personal use only, so that a dealers licence had to be obtained in order to build for a second party.

It was during this period that a decision was made to become a radio amateur. Two electrolytic interrupters were constructed in order to practice Morse code with a friend who lived several houses away. The signals were to be transmitted over the 250V power mains. According to George the device roared and thundered, and the house lights dimmed every time keying occurred, but at least the signal could be copied in headphones at the receiving end. He still gets a cold shiver down the spine when remembering that all that was between him and the next world was a home-made foil and paper capacitor. His friend also managed to survive, and later went on to a career with OTC.

George joined the WIA in 1925, and attended the dinner associated with the Institute's second annual conference, which was held in Perth during that year. Four eastern states delegates were in attendance.

The licensing examinations were passed the following year, and the call-sign A6GM issued, with operation permitted on the 30-35m band.

His first station transmitter consisted of a 210 triode operated base up, with the glass envelope immersed in a cup of oil for cooling. The antenna was a 70 foot long flat top, 35 ft high. Two bright emit-

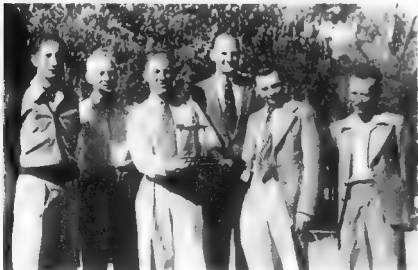


Photo taken to commemorate first VK6 win of the RD Trophy. L to R: Eru Machin VK6VM, Wally Caxon VK6AG (SK), Jim Rumble VK6RW, George Moss VK6GM, Ron Hugo VK6KW (SK), Bert Sorley VK6RO (SK)

ter triodes were used in the receiver, one functioning as a Reinartz regenerative grid leak detector, and the other as an audio amplifier. The power supply for the filaments was a 6V lead-acid battery with vibrator rectifier charging. The 48V high tension supply was home made using 24 test tubes as enclosures for pasted plate lead-acid cells. The cell grids were fabricated from the "H" section used in the construction of lead-light windows. This battery was charged using an electrolytic rectifier.

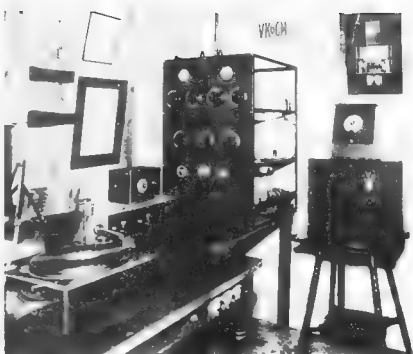
According to George the term "hot lips" originated around this period as a result of attempts at voice communication using "absorption modulation". The procedure was to connect a carbon microphone directly into the feeder between transmitter and antenna. Absorption of RF by the operator's lips when speaking too close to the microphone, served as an incentive to develop improved techniques.

George's employment underwent a change in direction in the late '20s. His original employer was about to close his business, and recommended him to an associate at one of the city's largest musical establishments. An offer was made and accepted to take charge of their radio servicing division. This firm was to open a commercial radio station shortly afterwards, and George obtained a Broadcast Station Operator's licence, in order to participate in the operation of the station.

Rebuilding and improvements to his amateur equipment continued during these early years, and in the early '30s he commenced broadcasting music three nights a week. These broadcasts were extremely popular, since he had ready access to recent record releases through his employer. This activity continued until the broadcasting of music by amateur stations was prohibited.

George served as Secretary and President of the WA Division of the WIA during 1935-36, and in 1938 was named as the inaugural winner of the Carl Cohen trophy for amateur radio research in WA. During the same year he attended the World Radio Convention as WIA delegate, at the invitation of the Government of NSW. The convention was held at the University of Sydney as part of the State's 150th Anniversary celebrations. The WIA took advantage of the presence of the numerous state representatives to hold its 14th Annual Conference in conjunction with the World Radio Convention program.

Evening classes in radio theory commenced at Perth Technical College in the late '30s, and George was to commence his academic career by taking over the lecture program in 1938. The following year he was to inaugurate radio appren-



VK6GM shack in 1935. Note the turntable.

RADIO DINNER

23

To be held at

KEOUGH'S HALL, NEWCASTLE ST., PERTH,

at 8 p.m., on

MONDAY, 10th AUGUST, 1925,

In Honour of the Visiting Delegates to the Federal Convention
of the Wireless Institute of Australia

ADMIT ONE

J. C. PARK, Hon. Sec.

tice training in WA, and with the onset of WWII, was seconded half-time to teach Army radar trainees.

The onset of hostilities brought about a temporary halt to amateur radio activities. An official telegram dated 2 September, 1939 advised that all amateur radio transmissions had to cease immediately, and that stations had either to be dismantled or rendered inoperative. George obtained his First Class Commercial Operators Certificate in 1942 in case his

services should be required during the national emergency.

With the re-issue of licences following the end of the war, rebuilding a new station centred around this high quality war surplus equipment which became available. On the academic side of his career, he obtained a Diploma in Communications and became a full-time lecturer, an occupation he was to pursue until his retirement in 1969. His involvement with teaching however continued in a part-

time capacity for another 17 years.

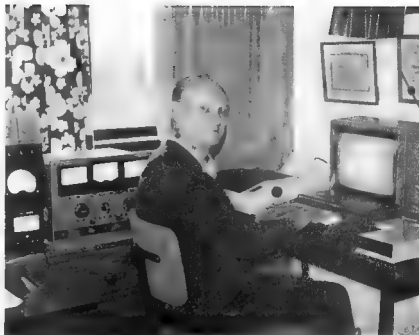
George's contribution to amateur radio was formally recognised in 1966, when he was made a life member of the WIA. He still maintains a very active interest in the hobby by way of HF, VHF, and computer RTTY. He is also possibly the most regular attendee at the fortnightly get togethers of the Old Timers Club in the West.

There can be no doubt that the majority of benefits and privileges which the present day amateur takes for granted, is in no small way due to that small and enthusiastic group of pioneers, who paved the way for our existing technology. In these days of freely available technical education, and relatively cheap components, it is difficult to fully appreciate the innovative skills and dedication required to construct all but the most exacting items, with limited knowledge and facilities.

The present day amateur is however deprived of one great moment of life, that of hearing his first ever wireless signal after adjusting the cat's whisker on a home-made crystal set.

Well done George.

BT



A recent picture of George VK6GM at his rig

Technical Correspondence

My article "SWR: A can of worms" (June 1989 AR) was a concerted effort to simplify the subject of antenna matching and to try to remove such theoretical smoke-screens as reflected power and overheated finals.

One error made by me, as pointed out by a correspondent blessed with common-sense was to state blindly that the source impedance had to equal the transmission line impedance for maximum power transfer to occur. Of course, I forgot the same theory states that 1/2 the power generated will then be dissipated by the source (ie, your transmitter) — a fact which all amateurs know to be obviously false.

Thus Dr Lucas' glib paragraph on mismatched sources (p11, October '89 AR) must be incorrect, as I was in my article. Reflected power is a very confusing, theoretical interpretation of a simple physical process, which doesn't stand a hard looking into using practical experience.

As light displays a "dual" nature (particle or wave?), so energy flow in transmission lines will continue to confuse technical people at all levels.

I think I'll stick to my guns and consider only input impedance variations on my transmission lines — that way I can sleep nights!

Anybody else got some thoughts on this?

JOHN SPARKES VK6JX

"PARADISE VALLEY" RMB737 DONNYBROOK 6239

Stolen Equipment

Stolen from R Ross-Wilson VK2PIT 11 James St Leichardt 2040 one TS440S transceiver Ser No 0060078

Stolen from Laurie Freeman VK3KLF 18 Grant Grove East Keilor (03) 337 3249 on 14th June

1 CME Electrophone 40 Channel UHF transceiver Model TX472S set 912 48058

1 Icom FM VHF transceiver model IC255A Ser 10308425

2 Antenna gutter mounts (electrophone and Hoxin).

Stolen from Albert Wojnar 9/203 Birrell St Waverley 2024 (02) 369 1803 one Icom IC 721 HF transceiver Ser 003663 equipped RFDS freqs.

Stolen from Norm Deitch VK2ZXC PO Box 192 Port Kembla 2505 (042) 74 1270 one Kenwood TS670 6m and HF transceiver.

AR

New Canadian Amateur Licences

The Canadian amateur licence system has been restructured into four levels of qualification.

It also breaks new ground by prohibiting all but the highest licence grade holder from building their own transmitting equipment.

Basic — all modes, 250 W all bands above 30 MHz, commercial gear only.

Add a 5 wpm Morse qualification to the above and additional privileges are granted on 1.8 MHz and 3.5 MHz.

Add 12 wpm Morse to the Basic licence and privileges are granted on all HF bands.

An Advanced licence will allow homebrew transmitting equipment and maximum legal power.

The new licence system starts from September 1, 1990.

Prevent pirates — make sure you sell your transmitter to a licensed amateur.

DXPEDITION TO SAINT PETER & SAINT PAUL ROCKS — PYOS, BRAZIL

BY NATAL DX GROUP

(THIS ACCOUNT WAS SENT TO US VIA AUSTIN CONDON VK5WO WHO WAS ONE OF THE EXPEDITION'S SUPPORTERS. ED)

This is the story of the radio amateur DXpedition accomplished by members of NATAL DX Group to Saint Peter & Saint Paul Rocks — PYOS, 14-20 May 1989. For those who know only of Natal in South Africa, the Brazilian city of Natal is on its north-east coast about 250 km north of Recife.

1. Location & Description

The early history of Saint Peter & Saint Paul Rocks is shrouded in mystery. They appear first in Mercator's Chart of 1538 and again on Ortelius' Chart of 1570. It is probable that they were discovered sometime between 1513 and 1538, since they are not shown on the Turkish World Chart of 1513. Schoolt in 1942 on his chart showing dates of discovery of important spots on the Atlantic Ocean, places a question mark opposite Saint Peter & Saint Paul Rocks.

The Rochedos Sao Pedro & Sao Paulo, commonly known as "Saint Peter & Saint Paul Rocks", lie almost on the equator 0° 56' N and 29° 22' W. They belong to Brazil and are situated less than halfway between Cabo de Sao Roque, on the extreme eastern tip of the South American Continent and Dakar (Africa). More precisely, the Rocks lie 621 miles northeast of Cabo de Sao Roque, State of Rio Grande do Norte, PS7 land.

Saint Peter & Saint Paul Rocks are normally visible at a distance of from 10 to 15 miles at which range they appear as a small speck on the horizon. From 3 to 5 miles away, they look like one island about 40 metres long, low lying, and with a serrated crest which upon closer approach resolves itself into two or three distinct peaks. The appearance of the Rocks varies considerably with their bearing. In a bright sun, reflection from the guano-coated top and sides causes the peaks to glisten like sails. A heavy surf beats against the Rocks on all sides but is especially strong on the eastern side which faces the equatorial current. On further approach, a crying mass of birds becomes visible over the Rocks, and on them, while crabs scuttle across the

rock surface, which is very irregular and pinnaced.

At the present time, Saint Peter & Saint Paul Rocks are composed of five larger islets and four smaller rocks, plus four small pinnacles which extend above the sea surface near the larger islets. Their combined circumference is barely 1/2 mile, and the extreme length (from N to S) is about 1/6 mile. The four largest islands are, in order of size, the southwest, northwest and northeast islets. South islet is somewhat smaller. A large cove is formed by the four largest islands and opens to the northwest. It is approximately 40 m wide at the entrance and some 85 m long.

The cove also opens to the southwest through a narrow channel. The cove is between five and ten fathoms deep and landing has been most difficult for all expeditions visiting the Rocks. The bottom, at the entrance at least, is covered with coarse white sand. Swell and surf boil continuously through the cove except on the "very calmest days".

The highest point on the Rocks today is located on the northeast islet, where the remains of a lighthouse are located. Its top is approximately 34 m above sea level and makes an excellent observation point and DX operating site.

The temperature is very high during the day, reaching 40° to 45° C. At night, there is a breeze which drops the temperature to 20° to 25° C. Rainfall, at this time of year, occurs daily.

Usually, before the rain, there is a very strong wind, and on three occasions we had to change our operating site. On one of these, the wind was so strong it pulled the canvas off the tent, leaving everyone and everything exposed to the rain for over half an hour.

There is no vegetation or drinking water on these rocks; they are of volcanic origin, inhabited only by two types of sea birds and one solitary heron.

2. Preparations For The Voyage

For quite some time, the NATAL DX Group, and members Karl PS7KM, Leo

PS7JS and Tino PT7AA had been planning a DXpedition to the Rocks. In October 1988, we decided to go ahead. Help was requested from other PS7 amateurs. The response was good, and included rigs, tents, tarpaulins, antennas, cables, etc.

In January 1989 we made the first contacts at an international level, with DX foundations and clubs, in order to obtain, if possible, some financial assistance. Food, water, batteries, diesel fuel, rent of a boat, two generators, these were among the essentials.

The difficulties were great and the expenses were always greater than our resources, apart from an inflation of 30% a month. That was the real enemy.

We asked various amateurs to join the expedition, and some agreed, but in the hour of decision only the three mentioned above stood firm in the intention of putting PYOS on the air one more time. We asked the National Department of Telecommunications-DENTEL to give us prefixes to use on the DXpedition, ZY0SS for SSB, ZY0SW for CW, and ZY0SY for RTTY.

After intense publicity in DX bulletins worldwide, we started to receive the first donations. We wasted no time in renting the vessel "MOANAS". The countdown was started, heading, the Rocks.

Unhappily, a few days before planned departure, the owner of the boat told us that, because of sickness in his family, he couldn't take us to the Rocks. We immediately started looking for another vessel. We checked out several, but the cost was very high, far beyond our resources, since we had already stated our budget, it would have been unfair to request more money from those who had already helped us.

After four days of searching, we met Peter Clemens Pereira, a German, resident of Natal, and owner of the sailing vessel "SHANTY". He agreed to rent us his vessel for US \$2000. We visited the vessel and verified that it was quite safe for such a trip. Of Dutch construction, it measured 15 metres. An experienced

FT-1000 HF ALL MODE TRANSCEIVER



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For the full story on the incomparable YAESU FT-1000, contact your local Dick Smith Electronics store for your copy of YAESU's 12 page full colour booklet.

Also, see A.R.A review in Vol 13 No. 2 issue, and A.R. review in July/August 1990 issues (copies of both reviews available upon request)

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navigator, Captain Peter had already gone to the Rocks several times. We contracted for his services, and set the departure date as May 6, 1989.

We had the great pleasure and satisfaction of including on our trip Sr Alexandre Filippini, oceanographer and diver, and chief of the Leatherback Turtle Project on the island of Fernando de Noronha. Thanks to his incredible willingness to help, he became an integral part of the expedition.

3. Departure

A full day of preparations included installing a radio and mounting an antenna on the stern of the vessel in order to operate maritime mobile, as well as carrying aboard all the needed materials. Finally, at 2108 UTC on May 6, 1989 we put out to sea from the Yacht Club at Natal. It was Saturday and we had a favourable wind. Our departure was recorded by TV Manchete, Channel 8, which broadcast the pictures at 2230 UTC on May 8.

We were quite tired and soon began to experience seasickness. We had a long trip ahead of us before arriving on the Rocks.

On the following day, Captain Peter advised that we were already 70 miles from Natal, taking advantage of a favourable wind. He showed us how to maintain the course, using the tiller and the compass. After that, we took turns in steering the vessel. While it was still morning, we turned on the old YAESU FT-707 and made the first contact, maritime mobile. It was with Felipe PS7FNG from Natal, at 1125 UTC. We were then contacted by Silveira PS7CW, who had contact with our families. Soon after Pepe PT7BR arrived on frequency from Fortaleza. These last two kept daily contact, passing news of the voyage to our families.

Early Monday morning, 8 May, we were visited by 12 dolphins which escorted the vessel for over an hour, making manoeuvres around the prow. We made contacts with Natal and Fortaleza, then Captain Peter started the motor, since there was a complete lack of wind. The ensuing calm lasted until our arrival at the Rocks.

On Tuesday the dolphins reappeared. We changed our heading towards the island of Fernando de Noronha, to refuel, since we were motoring more than had been anticipated. We arrived at PYOF at 1730 UTC. After a VHF contact with Andre PYOFF, we obtained fuel. A freshwater bath and an excellent meal in the hotel were next, and we left Fernando de Noronha at 2100 UTC headed for the

Rocks.

May 10, 1989, Wednesday. A normal day, we continued to motor. In the morning, we met a ship flying the British flag and verified that our heading was correct. It rained in the late afternoon, so we were able to take a bath on deck.

On the following day, a total calm, the ocean like a mirror, completely without wind, without waves. Sultry. We stopped the vessel and swam around it for a while.

On Friday, we continued without wind. We tested three generators and found that the 300 watt Honda was not working. We saw a distant ship which confirmed our position.

May 13, 1989, Saturday. An historical date, much celebrated in Brazil, Day of the Freeing of the Slaves. Still using the motor, we crossed the Equator at 1130 UTC and had a little joke with Leo PS7JS/ZYOSY. We told our radio contacts that he (Leo) had brought along a big knife in order to cut the Equator line! In the afternoon, heavy rain all around us; we could once more wash off a little of the salt. Finally, at 1605 UTC, Karl PS7KM/ZYOSS spied the Rocks, still only a dot on the horizon. After confirming it with binoculars, we also noted a fishing boat next to the Rocks. At 1933 UTC, already quite close, we began circling the Rocks and identified the fishing boat as the Do Rio Negro, belonging to Sr Manoel Figueredo da Silva. We approached to speaking distance. Sr Manoel, a Portuguese resident of Recife, was jovial and outgoing, quite talkative and friendly, and had fished in the area for over eight

years. He immediately volunteered to help us in any way possible. We anchored for the night, about 200 metres off the Rocks.

4. Landing And Operations

Sunday, May 14 1989. The second Sunday in May, Mothers Day, an important day for all of us, we should love to be in our homes, near our families. To make up for our absence, we made contacts via radio from a distance of over 1000 km.

At about 1035 UTC, low tide, we began the landing, using the inflatable boat from the Shanty and a little aluminium boat from the Do Rio Negro. Karl PS7KM and Captain Peter stayed on our vessel, organizing and passing along the various items. Tino PT7AA and Alexandre in the inflatable, with Leo PS7JS and a seaman from the Do Rio Negro in the aluminium boat, made the first trip. The distance was only about 70 metres. They carried a large amount of material: canvas, wood, antennas, water, food, a radio and battery. The calm sea permitted an easy landing. Leo PS7JS was the first to set foot on the Rocks. We set the stores on top of the stones. A strong wave surprised us, soaking the Yamaha 1400-Watt generator, parts of the baggage, food, camera, flash, two two-metre rigs and the coaxial cables.

We carried the material up higher, near the remains of the old lighthouse, clear of the waves. Confronting hundreds of gulls, we set up the tent and two antennas: a vertical for 10/15/20/40 and a beam for 10/15/20. We installed radios



The pinnacle of success!



Place of operation

and generators, and began activities. High SWR on both antennas; after a change of coaxial cable, it appeared that the vertical could give better results. This proved to be the case.

At 1848 UTC, 28 MHz SSB, ZY0SS made the first contact of the expedition; it was with K2EWB, Leon. Soon after, we contacted the first Brazilian station, PT2BW. We continued although very tired. Propagation was excellent on all bands. At 2115 UTC, 28 MHz CW ZY0SW called CQ and made the first contact with PY2PA Jacintho, ex-PY0SJ. The next QSO was with WP4ACE. Unfortunately, ZY0SW had to use a hand-key, the electronic key was left on the boat, and we could not return in the dark.

Tuesday, May 15 1989. Quite early, still dark, we were awakened by strong gusts of wind and rain which hit with enormous force. We managed to keep the tent upright. At 1305 UTC the wind and rain returned and this time succeeded in knocking over the tent and antenna. After the storm had subsided, we moved the tent to a better protected location on an incline. The canvas was set low, giving us more safety. After a few hours, we returned to the radio on SSB, a great pile-up, and we used split up to 25 kHz. At noon the temperature reached 45° C. At 2109 UTC we began operating CW again.

May 16, 1989. A little accident, Karl ZY0SS fractured a toe. Captain Peter advised that, while running the motor during the storm, in order to avoid collision with the other vessel, he broke the gear box! Alexandre managed to catch about 10 lobsters for our lunch, at 1900 UTC. It was impossible to eat at the

usual time, due to the tremendous heat, our real enemy.

On the following day operations ran normally, and at night RTTY operations began. After connecting the equipment, Leo ZY0SY made the first contact on 14 MHz, with F2BS at 2225 UTC. This was followed by a QSO with PT2BW. The equipment began to misbehave. We made the last contact on May 18 at 0016 with JA1ACB, and soon afterwards the computer and interface stopped working. We worked 37 stations. The Commodore 64 computer and MID-1000 interface were damaged by over-voltage. This finished the RTTY operation, nevertheless, we were pioneers!

May 18. The operation continued normally, no problems, SSB and CW. Each operator worked three hours. Karl ZY0SS still suffered from his swollen foot, and could not stand up for long. Around 1400 UTC the Yaesu FT-707 stopped receiving, transmit still ok. We put the Kenwood TS-130 on the air.

Friday, May 19. We continued operating, more than 5000 contacts. Propagation very good for VK, ZL, JA and 3D2, from 10 to 40 metres. USA and Europe, no problems, but incredible pile-up. In the afternoon we were visited by Sr Manoel and some of his crew for lunch. They brought fish and some lobsters. We opened a bottle of champagne to celebrate the success of the operation. At night, after a CW contact with PY1BVY, the electronic key quit. Operation continued on SSB.

Last operating day, Saturday, May 20 1989. With some of the equipment already on the vessel, we started packing

the rest. Meanwhile, Karl ZY0SS continued operating and made the last contact at 0932 UTC on 40 metres. It was with JA2BAY, thus bringing to a successful conclusion the DXpedition to Saint Peter & Saint Paul Rocks by the Natal DX Group.

With a full moon and low tide, the sea quite choppy, we began to load the remainder of the equipment to the Shanty. It took several trips. Leo ZY0SY was the last to leave the Rocks. At 1315 UTC, we began the return trip, heading Fernando de Noronha, with a strong wind.

The wind stayed very good, but fatigue was general. We were, in fact, completely exhausted. We spotted the island at 1000 UTC on Wednesday, May 24. With a torn mainsail, we could not approach the island and wind and current were against us. We made radio contact once more with PY0FF Andre, who helped by sending two small fishing boats to tow us into port. At 1700 UTC we succeeded in landing. That evening, Andre presented us with a marvellous dinner at his house.

At 1800 UTC the following day, we continued the trip to Natal. On Friday it rained heavily. Unable to use the sextant, we made contact with some ships to learn our position. That night we glimpsed the beam from the lighthouse of the Atol das Rocas. In the early morning of May 27, Saturday, the current carried us dangerously close to the atoll. With difficulty Captain Peter avoided it, to our great relief, at 0412 UTC. The moon was very bright, we could see the birds and hear the noise of the waves beating on the rocks. A tense moment! Around 0700 UTC, a wind came up which carried us toward the continent and Natal. We sailed very well for the entire day.

Sunday, May 28, 22 days into the trip. A long way from home. At 2100 UTC, we saw the continent. In spite of Captain Peter's efforts, the current was carrying us toward the Ponta do Calcanhar, 65 km off, and to the north of Natal. We passed the day trying to overcome the current, the wind against us, and each hour farther away from the coastline.

At 1000 UTC on Monday, May 29, the wind improved and little by little the land came nearer. Still early in the morning, by radio, we were informed that PT7BR Pepe and PT7SY Nivardo were in Natal to welcome us. At 1800 UTC we sighted the highest buildings of Natal. At last, we entered the Rio Potengi and anchored at the Yacht Club of Natal at 2320 UTC. The DXpedition to Saint Peter & Saint Paul Rocks was successfully completed!

Various hams were awaiting us, PT7BR, PT7SY, PS7RN, PS7CW, PS7BY, PU7ILP, as well as our family members



Landing

Tired but happy, we felt ourselves to be truly radio amateurs. It was a great adventure, an achievement of international renown, to put on the air one of the most difficult locations in the world — PY0S. And, after a magnificent dinner with friends and families, still tired, we slept soundly without the rolling of the sea.

5. Antennas And Equipment

We used the following rigs and antennas:

Radios:

- 2 - Yaesu FT101 & E, with VFO
- 1 - Yaesu FT707 with VFO
- 1 - Kenwood TS 130, with VFO
- 1 - Kenwood TS 820S, with VFO
- 1 - Yaesu FT 208R, HT 2 metres, damaged by the seawater, unrepaired
- 1 - Icom IC2AT HT, 2 metres, damaged by the seawater, unrepaired.

Antennas:

- 1 - Tribander, 10/15/20 metres
- 2 - Ground plane, 10/15/20/40 metres
- 1 - Dipole w/traps for 80 and 160 metres
- 1 - Dipole for 10/15/20/40 metres

Miscellaneous:

- 1 - Computer, Commodore 64, unrepaired

- 1 - TV B&W 5", Samsung.
- 1 - Interface, MID-1000, unrepaired.

6. Propagation

The propagation was excellent on any part of the bands from 10 to 40 metres. On 80 and 160 metres, strong QSB, QRN and QRM, few contacts made on these two bands. Stable propagation permitted hearing and working USA, Europe, Africa and Asia at any hour. We worked VK, ZL and JA at noon on 14 and 21 MHz.

7. Comments

We certainly had our shortcomings. The lack of a better knowledge of the location led us to make some mistakes. These will surely not be repeated, for we want to reactivate the Rocks in May of 1991. However, in spite of all the problems, we successfully accomplished our work with honesty and within the principles of the radio amateur. We made 6325 contacts overall, and worked 111 countries. On SSB there were 3502 contacts, on CW, 2786 and on RTTY, 37.

8. Losses & Damage

We suffered much equipment loss due to high seas and are forced to use all

donations to replace with new ones. The equipment belongs to PS7 ham friends.

Lost:

- 1 - Yaesu FT 208R, HT 2M
- 1 - Icom IC2AT, HT 2M
- 1 - Olympus 35mm camera
- 1 - Flash for Olympus
- 100m - Coaxial cable
- 1 - Tool box
- 1 - Computer, Commodore 64
- 1 - Interface for RTTY, MID-1000 & cartridge program

Damaged:

- 1 - Yaesu FT 707, reception unit

9. Acknowledgements

At this time we must express our most sincere thanks to all those who helped us, especially the following:

- Esquina Pneus, Natal, RN
- Helisom, Natal, RN
- CISAF, Natal, RN
- Poty Refrigerantes, Parnamirim, RN
- Dinel Baterias, Natal, RN
- Araucaria DX Group, Curitiba, PR
- Northern California DX Foundation, Inc., NCDXF, USA
- European DX Foundation E.V., EUDXF, West Germany
- International Amateur Radio Society, IARS, USA
- International DX Association, IN-DEXA, USA
- Down Town DX Association, DTDXA, Japan
- DXNS, TDXB, 59, QRX DX, QTC Bandeirantes, Worldradio, LIXB, DXPress, Les Nouvelles DX, RTTY Journal, Radio Sporting, Antena-Eletronica Popular, Radio Rivista, etc.
- Austin Condon, VK5WO, Australia
- Sr Manoel Figueredo da Silva, Recife, PE
- Alexandre Filippini, Fernando de Noronha, PE
- Andre Sampaio, PY0FF, Fernando de Noronha, PE
- Gin Naniwada, JA1ACB, Japan
- Le Roy E Miller, KA7BSD, USA
- Harry Makler, KX8C, USA
- PY1AFL, BVY, PT2BW, PY2PA, PS7ACB, BB, BF, NB, BY, CW, ER, RF, RL, SO, WB, WP, PU7IBZ, PY7DY, PT7BR, BZ, CG, CQ, OQ, SD, SY, WA
- JA2JW, EA7FWM, NI5D, IK5AA, TG9VT, W8KV, NE8Q, W7AMM, JH1ROJ, JG1OUT, 15FLN

Also, to all those who, directly or indirectly, contributed to the success of the expedition, our MUITO OBRIGADO! (grateful thanks).

Natal DX Group/Caixa Postal 597
59021 Natal RN
Brasil South America

Contacts By Band & Mode

Band/Mode	10	15	20	40	80	160	Tot Mode
SSB	820	955	1466	244	14	3	3502
CW	680	671	1053	370	10	2	2786
RTTY	-	-	37	-	-	-	37

Tot Band	1500	1626	2556	614	24	5	6325
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Countries worked - SSB, 104
CW, 47
RTTY, 11 — Total 111

Contacts By Band & Mode & Continent

Bd/Md/Cont	AF	OC	SA	EU	AS	NA	Tot Bd/Md
SSB 10	10	1	79	403	25	302	820
CW	2	-	32	490	6	150	680

SSB 15	22	2	63	368	58	442	955
CW	-	6	27	201	113	324	671

SSB 20	5	28	195	94	278	866	1466
CW	2	5	61	236	366	383	1053
RTTY	1	-	3	6	1	26	37

SSB 40	2	24	57	1	1	159	244
CW	1	-	18	104	-	247	370

SSB 80	-	-	14	-	-	-	14
CW	-	-	10	-	-	-	10

SSB 160	-	-	3	-	-	-	3
CW	-	-	2	-	-	-	2

Tot Cont	45	66	564	1903	848	2899	6325
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Average	0,72%	1,05%	8,92%	30,08%	13,41%	45,82%	100,0%
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AF=Africa, OC=Oceania, SA=South America, EU=Europe, AS=Asia, NA=North America.

What Is History?

J W EDMONDS VK3AFU/ATG

FEDERAL HISTORIAN

PO Box 565 Mt WAVERLEY 3149

Henry Ford is alleged to have said that "history is bunk". The popular consensus is that history is a Good Thing provided we don't have to learn from it. The WIA has recognised for many years that it should have a consistent policy on the collection of historic material and information but by its very nature the Institute has not been able to catalogue its records on a consistent basis. We now have a large quantity of radio journals, ranging from seven copies of Amateur Radio for several months of 1973 to irreplaceable issues of journals from the 1910s and 1920s. This material is sorted but requires further cataloguing, the sort of work that is simple enough but tedious.

The sorting of other documentary material is far from tedious. Unfortunately it is only too easy to be distracted from the task of sorting by the fascination of the social history of amateur radio. The minutes of the Federal Convention of 1956 are interesting and perhaps useful to a historian but can they compare with the documentation of the foundation of the QRLT in 1927 because "the Wireless Institute is not all to the amateur that it should be"? At a time when the role and relevance of the WIA is being questioned and argued perhaps the several attempts to set up rival or complementary organisations have special interest.

Two characteristics define amateur radio, a lot of people with enthusiasm for their service and hobby, and frequently burning fervour for argument, division and discord. We seem to hold our opinions about our hobby with a simple passion which history sometimes shows to have been too simple. Attempts to set up rival organisations to the WIA have not been well documented. We don't have enough primary evidence. If any amateur has primary or secondary source material about the QRLT or our ARRL in particular, and other less successful groups, it could be consolidated into a less scrappy history than we now have. I would particularly appreciate copies of material collected by individual amateurs who have had a special interest in other organisations.

The social development of our hobby is perhaps as worthy of record as our technical achievements. After which cliché the amateur historian loses track of time in the records of 3HL's first two-way contact with England in 1926 with 5XY in Lancashire. "...at 6am Monday. The Morse signals came in most clearly and were interchanged for about half

Use the form on the reverse of the Amateur Radio address flysheet.

an hour" reported the "Stawell Times". The "Kerang New Times" reported that "3HL has a very fine assistant operator in his mother who can handle the receiver and transmitter as effectively as her son." And that of course leads us into the need for well documented research into the historic role of the early women amateurs. Is anyone doing anything about it? If so please let me know. The WIA has a fair bit of anecdotal information but again we are lacking in primary source material so this is another request

ar

Novice Licences In Britain

Britain will have Novice licensing soon because the Government recognises amateur radio's role as a training ground for careers in electronics and radio engineering.

The Radiocommunications Agency has announced after more work is done on syllabus there will be Class A and Class B Novice licences available within 12 months.

Class B licence will permit operation on segments of 50 MHz and 430 MHz bands, plus 1.3 GHz and 10 GHz (the latter will be of particular use in classroom experiments).

On passing a 5 wpm Morse test Class B Novices will be permitted limited operation on 1.8 MHz, 3.5 MHz, 10 MHz, 21 MHz and 28 MHz.

Maximum power output will be 3 watts (or 5 W dc input).

The entry qualifications are attendance and completion of a training course which the RSGB intends to provide followed by a multi-choice examination.

■

Berlin Wall Collapse Opens Up Amateur Radio

The pulling down of the Berlin Wall and moves towards reuniting East and West Germany have also seen radio amateurs in both countries coming together.

They can now operate in each other's countries using their own callign without the need to obtain permission or a reciprocal licence.

It has been reported a very warm spirit of friendship now exists between the radio amateurs of the previously divided countries.

■

THE NEW CHALLENGE

A FABLE BY "EYE SOP", OR A HIT IN THE EYE ON SIX METRES"
J F HANRAN VK4JH

The lush pastures of Magnetosphere had, over the past decade, been badly ravished by Greenhouse. It was however, the beginning of a new challenge for Ultraviolet, who looked longingly at Ionosphere, and dearly wished to caress her Oxygen and begin a new lineage of Electrons and Ions. Although Magnetosphere had been passive for quite some time, and had decided to help, its distant cousin, Rising Magnetic Loop, had suddenly become very disturbed and was moving at an alarming rate through Photospheric Granules Del Sol, hell bent on giving birth to its own prodigy at the beginning of this new era, Cycle 22.

The impulsiveness of Rising Magnetic Loop could not be subdued, and this created chaos. Havoc reigned supreme. Umbra and Penumbra joined forces with their brothers and sisters to restrain Rising Magnetic Loop, who for a while, seemed to be suspended in space by family ties. But with increasing contempt, and writhing in anguish with the restraint he rose majestically in an open arch, quivered and broke free. This was the exact moment Ultraviolet had been waiting for, and with the speed of light he seized Oxygen. The union gradually produced brother Electron and sister Ion. Dielectric Field watched them grow and Magnetosphere moulded their character.

However all was not well! The influence of Dielectric Field was catastrophic, but not to the offspring, who flourished! At the bottom of the Dielectric Gradient, low potential prevailed. Energy was all but exhausted. Hades had risen to the surface of the earth, and in many places, and a new phenomenon "50.110" had been unleashed. This was a contagious plague of major proportions, which threatened to engulf all.

The renowned scientist "COMMON-SENSE" at the bottom of the "Gradient", could find no answer to the plague that had covered the surface of the earth. There was no cure for the virus. Anyone approaching this domain, would surely be blighted, even when only approaching its vicinity, if they lingered too long, yet it was essential that this place be visited, if progress was to be made. All seemed lost! One glimmer of hope remained for those infected with "50.110".

Recent archaeological excavations had uncovered some rare clay tablets from the past, and upon translation of the archaic script, it was discovered that this was a cyclic virus. It had occurred only infrequently in the past, and had very quickly disappeared within two or three years of its appearance.

However, it had also been documented that occasional trips of short duration to its habitat, depending upon the nature of the visitor, could produce great rewards which appeared to be infinite. Conviviality, discovery, and rejuvenation of spirit, to name but some.

Having at long last found the formula for the lost vaccine to combat the virus, great quantities were manufactured. The inhabitants of the lower Gradient of the Dielectric Field then, having self-administered the vaccine, very quickly returned Hades to the Shades, so that these dejected souls would no longer feel lost.

The virus "50.110" remained, and eventually became neutralized. The pleasure of all who were later infected with the neutralized virus, was "EC-STATIC".

Fims

All characters and places mentioned herein are purely fictional, and bear no relationship whatsoever to anybody or anything — LIVING or DEAD

ar

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24 MHZ DX OVER 7 YEARS 1982-1989

GRAHAM ROGERS VK6RO
22 GRACE ST FERNDAL 6155

Immediately after replacing the telephone hand piece after talking to Michael Owen VK3KI at approx 0810 GMT on 17 December 1982, I tuned up my 28 MHz quad on 24.940 MHz and called CQ. The actual time was 0829 GMT.

Of course I did not receive a reply but from that moment on I embarked on an exciting career in experimenting nearly every day on 24 MHz.

The 24 MHz band really is an exciting band, full of surprises.

Dozens of times I have called CQ DX on what seems to be a dead band and I have been happy to work a new station or country and have a long rag-chew with absolutely no other stations on the band at the time.

The lack of other VK stations was a surprise, but very, very few were heard until about 1988-1989 when more countries were able to use the band.

My very first contact with DL7UX at 1312 GMT on 17 Dec 1982 on CW was as exciting as my first ever contact on amateur radio and I was well and truly "hooked" on this brand new amateur band. How often do we get a new HF band to play with, the previous time was when 21 MHz was released many years before (apart from 10 MHz).

With the band only a day or so old, I spent a lot of time looking for contacts.

The next few countries were G3KMA, O2ZRH, F8FE, HB9FTR, 4F6CA, OE5HEW all in 1982 then came 1983 with PAOPN, GW3AHN, A4XYF, G14GPC, VK9YC, ZS6JW, K1BJ/3B8, K1BJ/389, TR8DX, FB8ZQ, 5B4PW, LX1YZ. These were good contacts, something out of the blue with no warning that the band was open.

The bottom of the cycle from 1984 to 1987 saw T77C, VU2LO, 14ZFY, VK9XJ, KH6SB and then one day in 1987 I met Brian, K6STI, a real nice bloke, an electronics engineer in Vista California. Brian was to remain a good friend up to the present day. He has a very good signal using a 2 element yagi and about 600 watts output.

Some amateurs may recognise Brian as the inventor of the Y.O. Yagi optimizer computer program. He is an expert on

Yagi antennas!

It took about 2 years of experiments with Brian before I worked him long path.

Some European countries have been worked long path at any time from about 0800 to 1330 GMT, and I even worked Harold, N9DEO in Indiana at about 1320 GMT via short path which is very unusual.

The remainder of 1987 saw SM0NTE, KH2D, 9MZF5, G6ZY/EA6, ZY4CG, YU1UM, all new countries.

KH2D became a good friend. Jim used a triband Yagi with 24 MHz extensions hanging down from the elements at the correct positions to allow 24 MHz to be used with gain and directivity; it worked well. Jim certainly was a character and had some great stories to tell about life on Guam; he even offered to send me a Yaesu FL2100Z via B52 bomber aircraft to Darwin, and I would have it sent from Darwin. Alas, the amplifier ended up in Japan with major faults, it never did have a ride in a B52!

During 1988 the band really began to pick up with many new countries worked, starting with ZC4JV, EA5CHT, ON4AZR, OE8PRK/YK, OK1AGP, WY5L/KH3, SV0FG, G6GDC, TZ5TT, ZLIBEY, H44DL, EA5BS/EA8, TI2KO, then a young lady popped up in the guise of P29ZL, Jeanette. She became a good friend and we had round tables with K6STI, P29ZL, KH2D and myself, for hours at a time with no other stations on the band.

Also during 1988 9J2WS Bill, FO0BY, GM0HXV, TK5BF, FR5EL, CT1BCM, VE1YX, HZ1AB, ZS3OM, FK0BC, YCOECF, ZK1DO (South Cook), YJ0AFU, GJ3EML, T30BC, K4EQY/KH0, 4S7NMR, 4X4FF/5N4, OD5RF, FM5WD, KV4AD, VK9NQ, AL7I, then T50DX (an Italian 24 MHz friend in disguise), BY1QH, 1A0KM, C3E5S, LU5DJO, PY3NZ, OY5ML, 8Q7DL, IS0EP, EI4DQ, EA9TP, SP3AGE, 9K2DR, TU2DQ, VK9ZM (Melish on 15/1/89). So that was the end of 1988 and a lot of fun was had working these new ones.

By 1989 the Sunspot cycle was really hopping with many new countries available, starting with VK9ZM, VP5/AA5AU,

HK0BKK, VQ9MQ, CA6XEA, 9N1MM, V85AA, (6ANX, TA1AW, KH6JEB/KH7, KC6MS (Micronesia), AP2MB, VK0JV, TL8WD, VS6UP, ZS8MI (a good one that!)) then on the 10 June 89 up popped my 100th country being XE2GFH, this was really my mate Brian K6STI who drove to Mexico without me knowing to give me the magic 100th! I thank you Brian, it was a very great pleasure and surprise.

After that came Z2ICS, VK0GC, GD4BEG, ZS4NS/3DA0, OH4RH, JH8RG0, HA3YC, CN8MC, T32IO, 5W1IK, KC6NX (Becau), OH3JF/OH0, 441ITU, 9H1IP C31LBB, UA3D0S (the first of many Russians), then a few other were JD1, XX9KPL, TF, S79, SV5QR so up to the 10 Dec 89 a total of 132 countries in just under seven years.

As you can see there have been many very rare countries on 24 MHz and a lot

A Call to all Holders of a Novice Licence

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The Course Supervisor
WIA
PO Box 1066
Parramatta NSW 2124
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417

11am to 2pm Monday to Friday
7 to 9pm Wednesday

of exciting times were had. The last two countries in December 1989 were XV2AA and KE0SC/D43

Some events which proved interesting included working SM and LA stations on CW with signals coming BOTH ways making CW very hard to decipher.

Many of the Caribbean countries were worked with the Beam across Europe between 1200 and 1500 GMT

Longpath to the East Coast USA occurred at about 1200 GMT onwards.

KIZFE, Bill was worked short path, long path and across both North and South Poles at different times. Very strong

signals from Bill and KA1PE occurred very often across the North Pole from 1100Z onwards.

Propagation on 24 MHz can be very different from other bands at times and experiments proved to be very interesting most of the time.

The Beacon IK6BAK is very often received as early as 0500 GMT until very late (1600 GMT).

The PY beacon on 24.900 shows up in Perth around 1030 GMT.

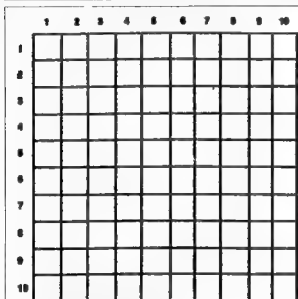
I once encountered a pirate — CBER on 24.950 talking on SSB to J28CB. This pirate was from West Germany and was

using CB talk! (SSB is illegal in DL on 24 MHz)

Although the band is now amateur exclusive, in the old days many commercials would show up. Also some very salty language from Australian fishermen (pirates) using LSB off the East Coast was observed in 1988, 89

I have also been active on 18 MHz and have worked around 100 countries, but it comes second to good old 12 metres. Perhaps you should try it. Good luck! Thanks to VK3KJ for telling me we had the band during that phone call in December 1982.

ar



Morseword No.41

Clues To Morseword No.41

Across

- 1 Camera part
- 2 Hide
- 3 Band
- 4 Touch
- 5 Endure
- 6 Cook
- 7 Painful
- 8 Walk
- 9 Face with masonry
- 10 Slip

Down

- 1 Quick
- 2 Material
- 3 Part of the eye
- 4 Annoy
- 5 Slaps
- 6 Stare
- 7 Cost of journey
- 8 Severe
- 9 Skin
- 10 Within

Audrey Ryan © 1990
Solution Page 36



Storm watch co-ordinator Manfred Willinger VK4KHW of the Brisbane area WICEN group in his "bomb shelter" gathering damage reports. (Picture courtesy The Courier Mail Brisbane)

The Storm Watch Net

In South-East Queensland, radio amateurs acts as "storm spotters" and their observations help update the Weather Bureau and State Emergency Service on approaching severe weather. The group belongs to the Wireless Institute Civil Emergency Network, and has been involved in numerous storm situations for more than a decade

WICEN State Director, Harry Stanfast VK4ACF said when there was the likelihood of a storm, reports were called for on the Brisbane two metre repeater VK4RBN. When damage reports start to be received an actual Storm Watch Net begins. The Net Co-ordinator Manfred Willinger VK4KHW of Moorooka operates from his radio shack in a European-style bomb shelter. Harry said the storms usually build up around 4-5pm and reports of power lines down, roofs damaged, tree debris, hail damage and flooded roads are gathered on the repeater. The reports provide advanced warning to the SES of where damage has occurred for activation for their volunteer crews, he said. The Weather Bureau monitors the net, which helps it plot the path of a storm cell, and has often expressed appreciation to those who provide timely weather and damage observations

The Storm Watch Net was extremely busy when Cyclone Nancy unleashed her fury in February this year, causing widespread flooding and power blackouts

ar

Don't buy stolen equipment — check the serial number against the WIA stolen equipment register first.

AWARDS

PHILL HARDSTAFF VK3JFE
FEDERAL AWARDS MANAGER

Recent Awards Issued

WAVKCA

No	Call	Name
1818	G4LVQ	Bob Williams
1819	N6PYN	Merle Elson
1820	DJ2PJ	H D Teichmann
1821	VK3BRZ	C Gnaccarna
1822	K5FNR	Terrence Morgan
1823	JF2WXS	Hiroshi Ban
1824	Y26TM	Dieter Phebe
1825	JE1DXC	Masayoshi Mihara
1826	JA6BZA	Isao Sakagami
1827	KE5PA	David Whittington
1828	JR1GJL	Kazuyoshi Amano
1829	ZL1BKY	A N Rankin
1830	LA4HW	Ole J Oddsén
1831	G4NXG	Alan J Birch

WIA80

42	W8AXI	Robert Weingartner
		First Michigan
43	KH8OE	Patricia Hibbs
		First Hawaii
44	DJ2MN	Manfred Vogt
		First Fed Republic of Germany
45	N4TKF	Philip Watkins
46	WA3MME	James Ferguson

WAS VHF

179 VK3BRZ (Six Metres) C Gnaccarna

Grid Square Award

Following my request in this column last month for some input about this award, I got a phone call from Charlie VK3BRZ, and we had a long discussion about this award. I would also like to point out that I have on file letters from John Martin VK3ZJC and Daniel Dobrosak VK3KKW, as well as numerous letters from Charlie VK3BRZ. Over the next month I will be putting together the draft rules mainly from the suggestions of the three people mentioned above, and my own ideas. These draft rules should be published next month. I won't really add any more at this stage but, suffice to say, if you want to have some input into this award — now is the time. I can be contacted weekdays after 7:30pm and at weekends on (03) 434 6424. I would like to have the draft rules in this column next month, and await some feedback. I will then try to have an amended set in the month after that, and, following from there, try to have the award available within three months.

DXCC

Until today (07-07-90) I have been unable to find enough time to get stuck into the DXCC records. My first goal is to issue awards for DXCC which are presently outstanding

(VK3EBP, VK3BRZ, VK4BJE) and then do some updated listings. I had a letter from Frank VK2QL who sent cards for 3C0GD (Annobon) and ZS9/DK7PE to take his total up two. Frank kindly donated these cards to the QSL collection, and I will forward them to Ken Matchett and publish his updated figures very soon, I hope — thank you Frank!

I would like to hear from anyone else who has applied for DXCC, but as yet haven't heard anything in reply.

I would hope to be able to get stuck into all the DXCC within two months.

ARRL

I have written a letter to the ARRL to clarify my position re WAS. There should not be any problems with this, and I should be able to report back on this in the next column. I have only one outstanding request for them at the moment. (Andrew VK2GAH, so if you read this Andrew, I will be in touch soon).

Award fees

It would seem that one common way that overseas amateurs find out about our awards is by word-of-mouth from other amateurs. But please don't forget to tell them the correct costs, which are as follows:

- WIA Members — free
- VK Non-Members — \$5.00
- Others — US\$5.00, or 6 IRCs.

The costs involved in getting awards printed, mailing tubes, stamps etc can really add up!

For an outline of the WIA Federal Awards, see AR February 1990 edition, pages 42 and 43. If you don't have this, I can send you a photocopy in exchange for an SSAE.

K1BV

I recently received a letter from Ted Melnosky 9K1BV who publishes the "K1BV Directory of DX Awards".

I do not have current pricing, but will publish these prices when I receive them. This is most definitely the definitive awards directory and should be a "must have" for all award hunters. The 1989 edition is 232 pages, and over 1005 awards are listed by country. Ted's address is:

Ted Melnosky
The K1BV DX Awards Directory
Suite 9
525 Posters Street
South Windsor
Connecticut 06074-2936 USA

Ted sent me a list of awards that require contact during 1990. As the year is already halfway through, I am listing some of them

this month and some more next month, space permitting.

Germany — Bonn 2000 years award

Commemorating the foundation of the city of Bonn in the year 1183! Contact stations in Bonn from 1 January 1988 to 31 December 1990. One contact per station per band. DLs need 100 points, Europeans need 60 points, all others need 40 points. Point values: Special stations DF0BNN and DK0BNN = 8 points, Club stations DK0AK, DK0HQ, DK0SG and DL0OV = 6 points; all other stations in DOK = 3 points each. CW contacts count double. SWL OK. GCR list and fee of DM7, 6 IRCs or \$US5 to Harald Kuhnhardt, DK1YU, Schulstrasse 10, D-5469 Windhagen, West Germany.

Germany — DARC jubilee award

This commemorates the 40th anniversary of DARC 1950-1990. Work club stations with prefixes DF0, DK0, DL0 during calendar year 1990. Earn 40 points with HF values as follows: SSB = 1 point, CW = 2 points, other modes = 3, DA0 = 5 points. Note, you may use only one DA0. These values may be doubled for DX stations. All modes and bands. GCR list and fee of DM15, \$US8 or 12 IRCs to DARC — Jubilee Diploma, Postbox 1155, D-3507 Baunatal 1, West Germany.

Japan — WARC '78 award

This commemorates the occasion of official adoption of the WARC bands in Japan. Contact at least 79 stations (one station from each of the 10 areas in Japan must be included) using the 10, 18 and 24MHz bands and receive their cards. Contact must be made during the period 1 July 1959 to 31 December 1990, and the limit for applying is 31 December 1991. SWL OK. The actual cards or a GCR list is acceptable proof. Single-band endorsements are available. Use the JARL award application (see KIEV Radio League Award Desk, 1-14-2 Sugamo, Toshima, Tokyo 170 Japan).

San Marino award

Commemorating the 10th anniversary of San Marino RC. Contact 10 San Marino stations (you can work one station on more than one band to count towards total) between 15 April 1990 and 14 April 1991. GCR list and fee of \$US10 to ARRSM, Box 77, San Marino 47031, Republic of San Marino. (TKSGIWMJ).

Sweden

Vasteras AROS Millennial Celebration Award. Contact Vasteras during the 1000-year celebration period of calendar year 1990. One thousand points must be earned. Vasteras stations need 100 QSOs at 50 points each, all others are worth double the values. SWLs need to receive 10 different cards from amateurs in Vasteras. The same station may be contacted several times, but only one per

band and per day. No repeater QSOs. Special logging sheet available for SASE/IRC. Applications must be mailed by 31 January 1991; SWLs not later than 1 July 1991. GCR list and fee of four IRCs to: Vasteras Rodoklubb, Award Manager, Box 213, 5-721 06, Vasteras, Sweden.

USA — Wyoming Centennial Award
Work three Wyoming amateurs on any band or mode combination during the 1990 calendar year. Look for Wyoming stations to be especially active the week of 8-14 July 1990, Centennial Week. GCR list with \$US2 or three IRCs by 31 January 1991 to: Wyoming Centennial Award, University Amateur Radio

Club, PO Box 3625, Laramie WY 82071, USA.

GCR

General Certification Rule. Most awards allow GCR in lieu of actually wanting your cards. GCR usually means getting the signatures of two witnesses who certify that you possess the cards and that the information you state on the application is correct. If the award rules specify club officials, you should make sure their title follows their signature; include the name of the club just to make sure. (Acknowledgment to Ted Melinosky for the above awards and GCR information). That's all for this month. 73 Phil.

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CONTESTS

Contests — Publication of Rules and Results

With the increasing production costs for AR, coupled with the limited appeal of some overseas contests to Australian amateurs, some economies will be carried with overseas contest publicity in AR.

The contest calendar will continue to give the dates of contests, where these have been provided to the FCC. This will indicate that a copy of the rules may be obtained by sending a request with a SASE to the FCC. If overseas contest results are provided to the FCC, results of VK winners will be published.

Contest band segments

Many contests' rules are now giving specific segments to be used for that contest. Is this the way to go to ease some of the conflict that appears from time to time between contesters and other operators? This segmentation may be compared with the popular DXpedition's operating methods, it works well for them. A solid core of VK6 amateurs supports the idea. What is your opinion?

RD contest . . . rules

Please read carefully this year's rules. There have been changes made. Some contentious ones have been removed. Make an effort and participate this year.

Ross Hull Contest

After considering comments made on the Ross Hull Contest over the past few years, a number of major changes are suggested for the 1990-1991 contest.

These changes include allowing the use of all bands above 30MHz, and returning to a scoring system based on distance and frequency. This means dropping the maidenhead locator system and would require entrants to estimate distances to, say, the nearest 100km.

It is also suggested to lengthen the contest,

but to base scoring on the best seven days chosen by the entrant. This should make it easier for amateurs to participate, even if they are not free for the full contest period.

It has become clear that it is now impossible to win the contest without using satellites, so separate terrestrial and satellite divisions are proposed. A new single band section should also generate more activity.

It is hoped that these changes will make the contest more of a challenge while still providing more opportunities for all amateurs to participate.

Tentative dates for the contest are Saturday 22 December to Saturday 19 January, giving four full weeks, but with a week's break for anyone wishing to also enter the VHF/UHF contest. If you have any comments to make on the RX rules, now is the time to do so, because the rules are still being formulated.

ALARA Contest

Eligibility: All licensed operators throughout the world are invited to participate. Also open to SWLs.

Object: Participation: YL works everyone, OM works YLs only. One contest (combined phone and CW) run over 24 hours.

Starts: Saturday 10th November 1990 at 0001 hours UTC.

Ends: Saturday 10th November 1990 at 2359 hours UTC.

***Suggested frequencies:** Bands to be used are 3.5, 7, 14, 21 and 28 MHz only. The following are suggested frequencies for easier location of contacts.

28.380	to 28.410
21.190	to 21.200; 21.380 to 21.410
14.250	to 14.280

Sample Log

Date/Time	Band	Mode	Callign	RS(T)	RS(T)	Name	Points
UTC	MHz			& Serial	& Serial		
				No Sent	No Recd		
10/11	0135	28	SSB	VK3EBX	59001	Joy	5
	0141	21	CW	VK3KS	599002	Mavis	10
	0600	14	SSB	FK8FA	59025	Aimee	5

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Operation: Phone and CW operation. Each station may be counted twice on each band for credit — once on phone and once on CW. All contacts must be made in accordance with operator and station licence regulations. No net or list operation, no crossmode.

Procedure: Phone: call "CQ ALARA Contest" CW: YLs call "CQ Test ALARA" OMs call "CQ YL"

Exchanges: ALARA member: RS or RST, serial no starting at 001, ALARA member, name. YL non-member: RS or RST, serial no starting at 001, or OM name.

Scoring: Phone: 5 points for ALARA member contacted 4 points for YL non-member contacted 3 points for OM contacted *CW. Contacts where at least 1 operator is Novice class count double points. SWL: 5 points for ALARA member logged 4 points for YL non-member logged.

*Changed from previous contests
Logs: Single log entry (but Australian YL novices entering for the Mrs Florence McKenzie CW trophy should indicate their CW score separately also). Logs must show date/time UTC, band, mode, callign worked, report and serial number sent, report and serial number received, name of operator of station worked, and points claimed.

Logs Must Be Signed. Logs also to show full name, callign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final. Logs must be received by the Contest Manager by 31st December 1990.

Contest Manager: Mrs Marilyn Syme VK3DMS, PO Box 91, IRYMLEY VIC Australia 3498.

Mrs Florence McKenzie CW Trophy:

This will be awarded to the Australian YL novice operator with the highest CW score (not necessarily an ALARA member). Minimum score 50 points. The actual trophy, because of the size and weight, will not be forwarded to the winner, but a certificate bearing a photo depicting the trophy will be sent to the winner each year.

Certificates will be awarded for the following:

Top score overall

Top score phone only

Top score Australian YL novice CW (Mrs F McKenzie cert)

Top score ALARA member in each country and VK call area

Top score YL non-member in each continent

Top score OM in each continent

Top score SWL in each continent

Top score VK novice

Top score overseas YL novice CW

Trophies will be awarded to the following:

Top scoring Australian YL

Top scoring DX YL

(Mrs Florence Violet McKenzie, 1892-1982, was the first woman in Australia to take out a transmitting licence, in 1921. She passed the Amateur Operator's Certificate of Proficiency in 1925 and obtained the call sign 2GA (later VK2FV). Mrs Mac taught Morse code to thousands of people, particularly service personnel, during the 1939-45 war years. In 1984 the Townsville Amateur Radio Club kindly donated a trophy in her memory.)

1990 John Moyle Memorial Field Day Contest Results

JOHN MOYLE FIELD DAY CONTEST

MANAGER

PHIL RAYNER VK1PJ

This is the first contest that I have checked and was surprised to find that some entries consisted of the actual field logs, including operator's scribbles, rubouts, corrections and, in some cases, illegible entries.

I do not expect every entry to be typed, printed by a computer or re-written, I just want to be able to read it.

From comments received with the entries and those heard during and after the contest, everyone enjoyed themselves. Yes, a few grumbles were heard, mainly about the rules. Even though they were in the minority, they did point to a few areas which need attention. Therefore, a thorough check was made of all logs leading to an adjustment of some scores and yes, unfortunately, another change to the rules. But, at least these changes will remain in force for the next three years.

The amended rules will be publicised once they are finalised. Congratulations to all who won their sections, and a special thanks to all who just dropped in to make a few contacts.

24-hour Results

A. VK5AW	2866
VK5GN	2497
VK4NEF	2036
VK5UE	235

6-hour Results

A. VK1PJ	2633
VK5QX	2139
VK4YB	2067
VK7KR	1262
VK3AFW	391
VK2EMU	261

B. VK2TR	618	B. VK3EFO	230
C. VK5ARS	1988	C. No logs	
VK4AIZ	1207		
VK3CFI	645		
VK4EV	317		
D. VK4IZ	7219	D. VK4YX	2002
VK1WI	5091	VK4WIM	961
VK3ANR	3911	VK7CHT	546
VK5ER	3066	VK2GHZ	161
VK3ZI	3004		
VK5AH	2928		
VK2HZ	2658		
VK3BCG	2536		
VK3GH	1364		
E. VK6ANZ	9492	E. VK4WIN	3149
VK2JA	4925	VK4WIG	1211
VK2CE	3422	VK5YG	867
VK2FFG	2729	VK5BAR	826
VK5ARC	2460	VK6AGN	630
		VK6AHR	506
G. VK3XEX	346		
H. No logs		H. VK5ACX	688
		VK4NFE	609
		VK2EL	262
		VK6BWI	36
		VK2JM	24
I. VK4SEA	870	I. VK3CBT	660
VK5ATU	799	VK2ENU	379
VK7HX	626	VK5BEB	225
VK3XB	117	VK2BDT	206
VK4YI	85	VK4IS	130
VK3KS	40	VK6WZ	69

HOW'S DX

STEPHEN PALL VK2PS
PO Box 93 DURAL NSW 2158

After the exciting month of May, which was packed with DX, June was a month of limited DX activity, and a month of 'great expectations'.

Trinidad Islands

This group of islands, off the Brazilian coast in the Atlantic Ocean, were expected to be on the air for two full months, June and July (See AR June issue). Eventually ZYOTK and ZYOTW came on air with some delay, but the operation lasted only about 3 days, and it appears that the last day of operation was around the 12th of June. No one yet has explained why this expedition had to be abandoned so suddenly.

Yemen 70

It was reported that this DXpedition made over 20,000 QSOs. The correct address for QSLs is: Mohamed Al Sabah, PO Box 8944 —

22060 — Salmiyah, Kuwait, and not the one which was reported earlier.

Albania ZA

This proposed operation was "the great expectation" for the month of June. Rumours, announcements, news, net announcements, totally confused everybody. Early in June, a South American source said that the two well known Hungarian DXpeditioners are in Greece (Peter HA5WE and Zoh HA5PP) and will start operating from Albania on the 4th of June.

On the same night, listening to the 14165 DX net, I heard that, according to their QSL Manager (Jacques F2YSW2), both Zoli and Peter are safe and well in Hungary, and not in Albania. Later somebody reported that Zoli is now in Tirana attending to securing licence. Warnings abounded about pirate operations with callsigns like: ZA5CW, ZA5DX, ZA5PL.

At one stage, even the name of Eva, FY2PE was mentioned as one who might be part of the expedition. This was later denied by Eva.

At the end of June, "well informed sources" already had the frequencies in their computers: 2855, 28535, 21335, 31235, 14235, 7003 and 3503. I am writing these notes in the first week of July.

The news service just announced that there were demonstrations in Tirana and shots were fired. No sign yet of the ZA operation. Oh well — it will be on the air — eventually.

However, taking into consideration the political turmoil which is now surfacing in that country, in my personal opinion, it will be in 1991 when we can work a genuine ZA station.

Tokelau Islands ZK3

Zbg, ex VK2EKY, arrived at these Islands on the 12th of June and became active as ZK3EKY.

He plans to stay for 2 1/2 weeks, and was heard almost every day on 14207 and on 14005. QSL to WA3HUP via the Bureau (VKs only).

World Soccer Cup — Italia 90

During June and July several Italian stations used the additional suffix /I 90 at the end of the call sign, indicating that they are connected with the "Italia 90 Worked Soccer Countries" award. The activity was from the 1st of June to the 31st of July. The special event station used the call of 1990A.

New DXCC Country?

Bill, KC1AG, Hans DK9KK, and Ian ZS9A have submitted an application to the DX Advisory Committee (DXAC), to recognize Penguin Islands as a separate DXCC country. These 13 tiny islands, covered with guano bird droppings, are situated in the Atlantic Ocean just off the Namibian coast and south of Walvis Bay. Access to these islands is strictly controlled. The application for a separate country status is based on the fact that these islands are more than 75 miles off the coast of Walvis Bay and South Africa. The decision of the DXAC is waited with great interest.

The World Radiosport Team Championship

This 10 hours event was held on the 20th July, in co-operation with the Goodwill Exchange Program of the 1990 Goodwill Games. The Goodwill Games itself, is an athletic event in Seattle USA held in July and August involving 2500 invited world class athletes. The World Radio Sport Team membership was endorsed by the Radio Sport Federation of the Soviet Union and the ARRL in the USA. There were 4 US and 4 USSR teams, and the following nations were invited to send competing teams: Canada, Japan, Spain, Hungary, Yugoslavia, Bulgaria, England, Sweden, France, Brazil, Finland, Italy, Argentina, Czechoslovakia and Germany. All standard contest bands were used from 10 metres to 80 metres, both CW and SSB. The official WRTC stations used the /WG supplementary suffix after their call.

Interesting QSOs And QSL Information

Note the following abbreviations: Callsign, name of operator, frequency, (kHz), mode, UTC time, ADAR means QSL info in previous AR issues.

LX2AP, Adam, 21240, SSB, 0700, QSL via the Bureau.

9H4L, Joe, 21190, SSB, 0640, QSL to: J Gauchi, 20 Parish Priest Hill St, Victoria, Gozo, Malta

SV5TS, Vasilis, 21255, SSB, 0638, QSL to: PO Box 7, Paradiasi, 85106, Rhodes Island, Greece.

HS1BV, Sombat, 21306, SSB, 0945, QSL to: S Tharinchareon, 1093-1 Pmholaythin Rd,

Bangkok 4, Thailand.

YSOAKY, Kiyoko, 14247, SSB, 0900, QSL to: PO Box 3 Tokaimura 31911, Japan.

VE3AA, 21012, CW, 0700, QSL to: KB3R-Edward J Michal, 3670 Camden St, Washington DC 20020 USA.

FG5BP, 14025, CW, 1000, QSL via KA3DSW: Kent E Riegel, RFD 1 Box, 133-K, Mohrsville, PA, 19541, USA.

FR5DD, Jean, 14029, 1000, QSL to: op: J Pierrat, 8 Ave de Badamiers, Les Pilaos, F-97434, Saint Glaise, les Bains, Reunion Island.

3A/FEGV, 14031, 0700, CW, QSL via: op: Paul Maria, Ecole Adrien Camaret, Montee du Souvenir, F-06500, Mentone, France.

LX0SNJ, 14008, CW, 0600, QSL via Bureau.

6V1A, 14029, CW, 0600, QSL to: Box 971, Dakar, Senegal, Africa.

HSOAC, Terry, 14011, CW, 1040, QSL to: NY2E, R Riker, 819 Old Medford Ave, Medford, NY 11763

TA5KA, John, 14030, CW, 0420, QSL to: HA0NNN: Janos Bolyoczki, Arany J U 2, H-4622, Komoro, Hungary

SV9DLRAI, Ben, 14032, 0500, CW, QSL to: DL6RAI, Bernhard Buettner am Anger 4, D-8300, Ergolding, W Germany.

TZOMAR, Tom, 14009, 0812, CW, QSL to: DJ5RT, W Ruppert Riesenkopfweg 7, D-8209, Stephanskirchen, W Germany.

SY1LS, 14013, CW, 0500, QSL to: REL Salcedo, 103 ave Norte y Pasaje 7 Escalon, San Salvador, El Salvador.

VE3AY, George, 14250, SSB, 0905, QSL to: George, 4254A, Menoher road, Wahiwa, Hawaii, 96786, USA

RA8V/RB5YM, Ivan, 14053, CW, 1237, Oblast 176, QSL to: Box 281 Chernovtsy Zip, 274018, USSR.

UW8V/UA0UB, Igor, 14030, CW, 1336, Ob1 175, QSL via UA9AB via Bureau.

4K4POL, Aleks, 14016, CW, 0837, QSL to: UA0KCL, via Bureau.

YJ8RN, Rod, 14226, SSB, 1149, QSL to: Rod Newell, Box 905, Port Vila, Vanuatu.

OM7LO, Tibor, 14211, SSB, 0436, QSL via OK3LO via Bureau.

J39BS, Derek, 14243, SSB, 0635, QSL to: WB2LCH, Gene W Edge Jr, PO Box 64, Gloucester NJ 08030-0064 USA.

VQ9RB, Dae, 21205, SSB, 0546, QSL to: WA4DPU, Edwain E Black, 1110 Bagley Dr, Fayetteville, TN 37334, USA.

C6AFW, Farley, 14226, SSB, 1100, QSL to: Box N-1316, Nassau, Bahamas

JY5DK, Mike, 14250, SSB, 0345, QSL to: ON6BY, Monique Van den dokker, Sartisan 70, B-8400, Ostende, Belgium

KP4AAQ, Will, 14165, SSB, 1155, QSL to: William Arce Crespo, A-C2 jardines De arecibo, Arecibo, PR 00612, Puerto Rico.

GJ3FKW, Ken, 14037, CW, 0706, QSL via the Bureau.

9H1GS, Sam, 21205, SSB, 0515, QSL via the Bureau to VK2AKP

TA1AZ, Derya, 14222, 0635, SSB, QSL to: Derya Sevgen, Box 2011, Bakirkoy, TR-34710, Istanbul

5H3TW, Tom, 21210, SSB, 0533, QSL to: K3ZO, Alfred A Laun III PO Box 31097, Temple Hills, MD 20748 USA.

RTTY News

And the news from Syd VK2SG EA9MY, 14087, 0026Z, QSL to: Box 368, Melilla, Spain

5N8ALE, 21077, 1527Z, QSL to: DJ2VZ.

VR6WH, 14085, 0549Z, QSL to: Bill Hag, 12 Kauri Loop Road, Oratia, Auckland 1207 NZ.

RF6FC, 14090, 0449Z, QSL to: Box 21, Telish, Georgia, 38002 USSR.

FY4FS, 14083, 0304Z, QSL to: Box 168, F67600 Salestat, France

8PAT, 14088, 0505Z, QSL to: Wolf Wagner, 12230 St James Rd, Potomac MD 20854

UG7GWY, 14082 0508Z, QSL to: Armenia Yerevan Indeks 5, Radio Club, 375007, Armenia, USSR.

ED9CI, 14083, 0001Z, QSL to: EA9KQ.

T5RM, 14074, 2114Z, QSL to: HB9RTR, 134 Saules, 1233 Berne Switzerland.

SU1HN, 14083, 0305Z, QSL to: Box 1578, Alf Maakan, Cairo, Egypt

From Here And There And Everywhere

Bing, 3D2XV has left Rotuma and returned to Foster NSW. He said that he will go back to Rotuma and to A35 in October/November this year. — Czech radio amateurs are celebrating the 60th anniversary of the issue of the first amateur licence in their country. They are using the special prefix of OM instead the well known OK. Ron ZL1AM0 was active on the Solomon Islands. He used the call sign H44RW. QSL direct only to his home call. — Dave, VK0DS is active from Mawson Station in the Australian Antarctic Territory. — C08JA QSLs via 10WDX — IK5DNE/IA5 IOTA EU-28 — was on Capraia Island, situated between Corsica and Elba. — JA7FTJ/DJ1 is on Iwo Jima, Ogasawara Islands QSL to: JA7BJ. — ED9CI was active from the Chafarinas Islands. IOTA AF-36 The Chafarinas are located just off the coast of Morocco, 30 miles East South East from Melilla. The three small island group has belonged to Spain since 1848. QSL to: EA9KQ — C53GB was John from The Gambia. QSL to: FD1MXH. — HR2FP was heard on 14226 at 1107 QSL direct to the callbook station. — IE0CM John, was a special event station celebrating the foundation of the University of Perugia. QSL to: IOGEJ. — IB1T was heard on 14179 at 0600 UTC QSL to: 11RBJ. — 7Q7JM QSL direct to: Box 30135, Lilongwe, Malawi, Africa. H18PGG was heard on 1422 at 0630 QSL to: Box 2310, Santo Domingo, Dominican Republic. KA2LJ was heard on 14185 at

1145 UTC. It is a US Coast Guard Loran Station on Iwo Jima. QSL to home call: WB3EXR after September. 1Z9B is Kenny. He was heard working from South East Burma. He gave his QSL manager as KA6V. — Zedan was heard in June handling some emergency traffic with 4UN1UN in connection with the Iranian earthquake. — It is rumoured, that there will be some new activity later in the year from 70 VP2VM is "Mac" on Tortola Island British Virgin Islands QSL via the Bureau. — Jack C21NI has made 1428 QSOs from Nauru and 1352 contacts from TUVU 120. — QSLs for 9H1IV are to be sent to VK3FAG. — Worked 5T5FA Marco, Mauritania on 18125 kHz at 0650. He was located 80 kms south of Kifa and 20 kms from the Mali border. They are a group of Italians on work assignment. Marco often crosses the border, and then he uses the TZ call sign for which he has a licence. His vertical antenna for this band was a galvanized iron pipe. QSL to: IK3GES. — Since 1945 there were only three operations from Albania, all of them in the early 70s. Khalid 9K2KS has checked into the "222" net. QSL to: Box 3181 Safat, 13032, Kuwait. — The QSL address of TZ6PS is:

Peter Skalweit, BP 428, Bamako, Mali, West Africa. — Simon, S79SC leaves Seychelles in August. QSL to: Simon, Box 234, Seychelles, Indian Ocean. The Spratly operation was approved by the DXCC. QSL direct only to: Box 308, Moscow 103009 USSR. (There is no stateside QSL Manager.) No call sign on envelopes. WZ6CST4 will return shortly to Sudan, this time on CW. — Crozet FT4WB is not often heard these days. QSL to F6ITD — 7K1AAA was the Japanese call sign issued in April. The No.1 call area in Japan has exhausted all the standard call signs, and the call sign blocks of 7K1-7N1 were opened for amateurs. Ron, 7Q7RM is active from Malawi QSL to: Ron MacFarlane, Box 472, Blantyre, Malawi. — Mike, 5B4TI has left Cyprus and returned to the USA. The 150KV cards are not yet printed. Jim, A51JS produced an excellent colour card and they were posted mid July to all parts of the globe.

Interesting QSLs Received

Note. W=weeks, MO=months, FM=from, MGR=manager, OP=operator.
All cards received direct; TA1AL 3W FM

MGR. JX1UG 6MO FM MGR, OY7ML 3W FM OP, C21NI 2W FM OP, T3QJH 2W FM OP, VR200PIJR 2W FM MGR, 7X2FK 6W FM OP, TZ6PS 6W FM OP, CN8GI 1MO FM OP, A51JS 2MO FM OP, 7Q7LA 3W FM MGR, KP2A 3W FM MGR, ZF1RC 6MO FM OP, V47KTG 4W FM MGR, C31UA 3W FM OP, JY5DK 2W FM MGR, 4Z4UR 3W, CT1CNT7W, V31PC6W, SV2UA 3W, 5W1KT, 3W, V5AAG 6W, A45ZF 4W, 4U1WB 2W 9V1XB 2W.

Late News

Penguin Islands. News just to hand indicates that in the second part of July there will be a DX operation from these islands. (See notes above.) DL8CM/ZS1, DK9KK/ZS1, and ZS9A/1 operated both in CW and SSB on all DX bands. QSLs for ZS9A to home call direct, or via the Bureau, for DK9KK/ZS to be sent to DF0KD

Thanks To You

Many thanks for the information received from: VK3DD, VK4DA, VK4OH, VK28G, "QRZ DX" and the "The DX Bulletin." Your support is always appreciated.

Good DX and 73

BT

VHF/UHF AN EXPANDING WORLD

ERIC JAMIESON VK5LP
9 WEST TERRACE MENINGIE 5264

These few notes are written from the confines of a hospital bed once more. My progress seems to be very slow indeed.

I wish to thank all those people who responded to my request for latest information regarding the six metres standings box. Unfortunately, at this moment all information is locked in my computer and being in hospital has not permitted me to add the latest information, so reluctantly I cannot produce the list this month. I hope I can get home in time to produce the list for next month.

Six Metres

Ron VK4BRG reports an excellent opening to the USA on 29 May. Band opened at 0038 in Texas and closed at 0211 with New York state. Ron worked 39 stations in 11 states and covered such diverse areas as Oregon in the west,

New York in the East, 7 in Georgia, 2 in South Carolina, Kansas, Texas, Oklahoma, Colorado, New Mexico, Nebraska and Utah. What a thrill!

On the same day N16E/KH6 had many hours of propagation to the US including the east coast. The US mainland was experiencing much Es with some extending to the Caribbean. Ron believes many of his contacts were assisted by Es at the US end, and possibly some at his end as he worked FK8EB via Es only an hour later.

Beacons

Peter VK3AWY reports that the Geelong 6 and 2 metre beacons are currently being relocated to Mt Anakie, QP22, the site of the Geelong 2 metre and 70 cm repeaters. When completed shortly, the beacon call signs will

be changed from VK3RGG to VK3RGL which means all amateur equipment on Mt Anakie will have a common call sign.

Closure

That's all I can manage this time, including one thought for the month: "Don't take if you are not willing to give!"

73 From the voice in the hospital!

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GILBERT GRIFFITH VK3CQ
7 CHURCH ST, BRIGHT 5264

As you are no doubt aware, I no longer spend as much time as I would like to on CW operating. Although I still consider myself a devout Morsiac, I like to be informed on other modes, as a good all-rounder should. To this end I have been devoting some time during the day to packet radio.

Packet Radio is an interesting mode, especially if you are toying with computers, and interested in communication (knowledge) for its own sake. Particularly if you can digest pages and pages of information of all kinds which are available on bulletin boards.

For instance, I first heard about the world record Morse code sending attempt by the Westlakes Amateur Radio Club to celebrate ITU Day on 17 May on packet BBS at VK3BBS. A team was to take part, in one-hour shifts, for continuous sending of the history of the ITU on 7050 KHz starting at 0000 UTC on 17 May and finishing 24 hours later. A representative from the Guinness Publishing Company in England was invited to attend the club's shack at Teralba. This information came from Greg VK2GJS@VK2CZL (that's his packet address) and is an example of something I would normally have missed, never mind that you get the info three months later; that is my fault for writing this column three months ahead!

Another example, I downloaded four messages from ZL2UUV@ZL2WA which were addressed to CW@ASIA and entitled "Branch 74 Discussion Paper on Morse Code and Amateur Radio in the 1990s". The reason there were four messages under the one heading is that a bulletin can usually hold up to about 4K bytes and that is only about one page. This discussion paper is four pages long and, very briefly, it proposes the dropping of Morse Code testing for amateur candidates. It is not a proposed submission to WARC such

as the Israeli one featured last month, but an invitation to stimulate consideration and comment with constructive feedback to ZL2ARW@ZL2WA if you have packet, or The Secretary, Wellington VHF Group Inc, PO Box 12-269, Wellington North, New Zealand.

In this case I am sending the text of last month's column to them on packet, as they will probably not see it any other way. Isn't that handy!

You too can see the full text of the paper by looking for it on your local packet BBS or asking a friend to download and print it for you. You can send me a stamped addressed envelope and I will print it out for you.

Let us ask ourselves, "What is the motive for wanting to drop Morse Code?" In Australia we already have a no-code licence, which is very popular, and allows the use of bands over 30 MHz, which are where the new modes are being used anyway. Is it the Limited call holders who want a full call with no code? Or do the protagonists believe that a no-code licence will attract more people into the amateur ranks. I don't believe it will, because there is already a no-code licence available.

Do amateurs want to use the new modes on HF rather than VHF? I think it would be a mistake if they did. If you consider packet, it is not particularly reliable on HF, but there is room for experimentation, and bulletin board "getaway" stations are currently making good use of higher band rates and satellite technology. I personally feel that there is not enough room in the HF bands to accommodate individual packet stations, or even many of the bulletin board gateways at their current rate of increase. You have probably seen some of the arguments already; you could even call them fights!

As far as I can see, the only motive for

wanting to drop Morse is that it is simply old fashioned. On the other hand, if countries do not have an equivalent to our Limited call they have a good case against the code.

I would much rather see a new licence which involved more emphasis on Morse Code. Perhaps a theory test with no SSB, VHF or other complications, together with 12wpm sending and receiving Morse, for a CW only. All HF bands only, maybe homebrew only ticket. I think this would provide an opening separate and easier than a Limited call, and would attract new amateurs, especially those not so well off, and those not yet interested in computers.

Well, what do you think? We have only two years to talk about it, and if we want to further the use of Morse Code we are going to need good arguments and helpful advice to back us up.

You can contact me on packet at VK3EEE, which is my nearest BBS. I hope to hear from you.

A final note on the Westlakes ARC Marathon CW attempt. After sending a note of congratulations (on packet), I received a short note back from them saying that I would be sent a full report in due course. Perusing the BBS on the same day, I came across another report which said, "The plug was finally pulled at 0330 UTC on Sunday 20 May after 75-1/2 hours of Morse with no more than a five-second break (due to a loose lead on the key)... Approximately 30 operators were involved in the attempt, and reports of signal strength — with messages of encouragement — were received from all over VK. It is understood that the previous record stood at less than 24 hours. The rig used during the whole of the marathon effort was the club's trusty Kenwood 5208, which performed flawlessly throughout. The club wishes to thank everyone who helped in the exercise..."

from VK2JDH@VK2EHQ 21 6 90 af

AMSAT AUSTRALIA

GRAHAM RATCLIFF VK5AGR
GPO Box 2141 ADELAIDE 5001

Our usual AMSAT columnist, Maurice Hooper VK5EA, has unfortunately been struck by a sudden illness. Graham VK5AGR has kindly stepped in to fill the gap. We wish Maurice a speedy recovery.

National Co-ordinator
Graham Ratcliff VK5AGR

Information Nets

AMSAT Australia
Control

Amateur check in 0945 UTC Sunday

-VK5AGR

Bulletins commence: 1000 UTC

Primary frequency :3.685 MHz
Secondary frequency :7.064 MHz

AMSAT SW Pacific

Control :ZL1WN
Bulletins commence :2200 UTC Saturday
Primary frequency :14.282 MHz

AMSAT-OSCAR-13 Orbis

Karl Memzer DJ4ZC via Telemail 28 Jun 90

Recently some information has been circulated stipulating the decay of the AO-13 orbit

between 1992 and 1997

Elliptic orbits with high inclination (like AO-13) are potentially unstable due to lunar-solar perturbations. This has been known for a long time, and in fact some Molniya-satellites have prematurely decayed from this mechanism. AMSAT was aware of this problem, and had a study performed by a NASA expert in the late nineteen seventies for the Phase 3 programme. The conclusion of the study was, that the perigee height can oscillate with an amplitude of +1000 km. As a consequence, the minimum perigee height for the Phase 3 satellites was chosen to be 1500 km. On AO-13, 2500 km was chosen for additional margin against decay.

Recently, the problem of orbit stability was revisited by Victor Kudielka, OE1VKW (AMSAT DL Journal 2, 90, pp. 5-7) see in

cluded graphical plots from this article for AO-10 and AO-13. OE1VKW discovered that the perturbations can have a longer "time-constant" and thus result in much larger effects than previously believed. In particular, he predicted a possible decay of AO-13 for early 1997. At this time, we do not understand the discrepancy between the old study and OE1VKW's results. Since OE1VKW's results so far are in good agreement with the actual orbit of AO-13 (and AO-10), there is little doubt that his computations are basically correct. So the conclusion is inevitable that the old study was either too coarse, or that the change of the lunar orbit (18.6 years nutation period, 8.6 years period of perigee rotation) has invalidated the original study.

The publication of OE1VKW's work triggered a flurry of activity in the USA. In particular, Bob McGwire N6HY used the NORAD tracking program and found that a decay may happen as early as 1992. However, Bob states that he used the program as a "black box" without having user instructions (Sounds familiar!! - Graham VK6AGR). Unfortunately, the orbit situation is such that some very slight parameter-changes have a dramatic influence on the lifetime. Also, numerical integration programmes have many potential pitfalls. So, at this time, we can only conclude that the perigee height of AO-13 is coming down and this could lead to the loss of AO-13 during the '90s.

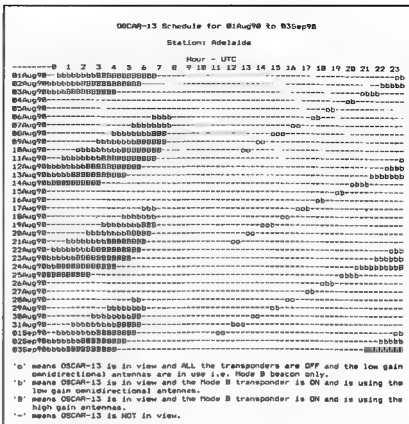
Also, at this time it is unclear in what direction the orbit will be influenced by the onset of air drag (ie atmospheric drag). It could either make the orbit more stable or accelerate the decay. Also it will be worthwhile to investigate if we have any means to prolong the life of AO-13 by exploiting the on-board systems.

With the thorbit of AO-13, we apparently were very lucky and very unlucky at the same time. We were lucky in that we used our propulsion excess to increase the perigee height over the original figure, just to "buy margin" without a strong reason. But we were also unlucky because the present studies were not available in 1988. It would have been easy to either wait after the first motor-burn for a sufficient change in RAAN before the final burn thus eliminating the problem, or to increase the perigee height even further. Certainly we will not be so blue-eyed with Phase 3D. Of course, AMSAT-UDL will make every effort to keep AO-13 in operation as long as possible. We hope that we can keep AO-13 until Phase 3D is launched to give us continuity of operation.

Future Molniya Satellite Orbit Selection

Franklin Antonio N6NKF via Telemail
14-Jun90

Lifetime for Molniya-type orbits is a very strong function of initial Right Ascension of



Ascending Node (RAAN). For every value of inclination and Argument of Perigee (ARGP), there are some values of RAAN which produce an orbit with a short life, and some that produce an orbit with a long life.

This happens because the solar and lunar gravity perturbations are a strong (and quite complex) function of how the satellite's orbit ellipse is oriented in space relative to the orbit plane of the Sun and Moon. This orientation is determined by the three orientation angles, inclination, ARGP, and RAAN.

In fact, it may be impossible to guarantee a reasonable lifetime without specifying RAAN. In the past, it appears that careful attention was paid to inclination and ARGP to provide the desired satellite utility, but not RAAN (not true see Karl DJ4ZC's article). After all, because the satellite is intentionally non-synchronous, RAAN doesn't affect its utility at all.

Now that we understand and appreciate the solar and lunar gravity perturbations, and are able to calculate their effect, we have the ability to select values of RAAN that will produce the desired life. Unfortunately, RAAN is determined mostly by the time of launch! If we were the primary payload, we could specify launch windows which would control RAAN to our specifications. Unfortunately, that is

probably out of the question.

References:

G E Cook, "Luni-Solar perturbations of the Orbit of an Earth Satellite" *The Geophysical Journal of the Royal Astronomical Society*, Vol 6, #3, April 1962, pp 271-291.

D G King-Hale, "The Orbital Lifetimes of Molniya Satellites", *Journal of the British Interplanetary Society*, Vol 28, pp 783-796, 1975

AMSAT-OSCAR-13 Orbit Studies without a CRAY Computer!

James Miller G3RUH via Telemail 24 Jun 91

Just for the record, here is an outline of the work I have been doing on AO-13 orbit lunisolar perturbations over the last couple of months or so. This work has been discussed with Bob N4HY and others, but not in written form. Anyway, I started on this stuff in December 1987, for fun. Yep — I'm not easily amused.

Now I do not have the luxury of a Cray Vector-2 computer with 128 bit precision, still less the time to play with one. Fortunately, neither did the 19th century numerical astronomers, so they devised several methods of

perturbation analysis that were suited to "low" precision manipulation at a modest pace.

One of the principal difficulties with integrating the equation of motion of a satellite is that the central body force (the Earth's gravity, about 1 G) is many orders of magnitude larger than the other perturbing forces we are interested in, namely:

Max Value (in units of 1G):

1. Non-spherical Earth, J2 term - $1E-3$ G
2. Non-spherical Earth, J3-J - $1E-6$ G
3. Moon's differential pull - $6E-7$ G
at a range to S/C
4. Sun's differential pull - $3E-7$ G
(at a range of S/C of 40,000 km)

On the other hand, because of this large disparity, the mean satellite orbit is to a great extent predictable, viz it moves in an elliptic orbit as per Kepler's equations. Of course we all use this in our familiar satellite tracking packages.

(Then James discusses the mathematics he has used in his orbital studies — to obtain a copy of the full article send an SASE to AMSAT-Australia — Graham VK5AGR)

This technique of special perturbations was devised by Encke (c 1857) and is widely used in space mission analysis.

References:

Bate, Mueller and White, "Fundamentals of Astrodynamics", Dover 1971, ISBN 0-486-60061-0, Chapter 9.3

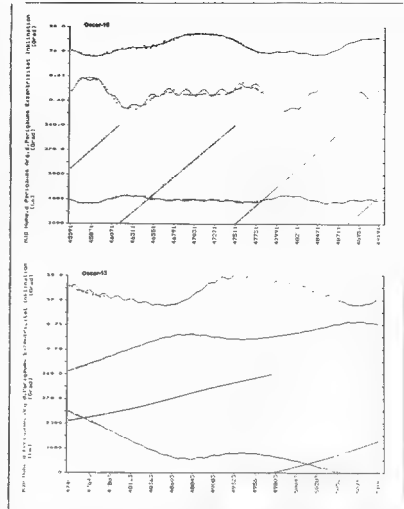
Roy A E, "Orbital Motion", Adam Hilger 1988, ISBN 0-85274-229-0, Chapter 7.4

The most arduous part of this work, whatever method you use, is choosing and driving the INTEGRATOR. It's hard enough to double integrate reliably over an hour, let alone a year or two! Just think about it. A minuscule force of say $1E-12$ G acting for one year builds up a displacement of about 5 km. Yet we're dealing with forces 10000 times BIGGER than that, over several years.

Excellent Signals Heard On AMSAT-OSCAR-10-> Why Not Use It!!!

GRAHAM RATCLIFF VK5AGR

OSCAR-10 is currently receiving sufficient solar panel illumination to support Mode-B transponder operation. I am told that many stations are disappointed with the amount of activity on OSCAR 10 when the signals are so good — might I suggest that people put out the odd CQ call on 145 910 MHz and I think you will be pleasantly surprised to hear how many stations are actually listening and active on that frequency. The current estimate of OSCAR-10's attitude for 06 Aug 90 is Longitude 13 degrees Latitude - 3 degrees which equates to a solar illumination of 80%. Hopefully, OSCAR-10 will support Mode B transponder operation through until the end of August, when the attitude estimate will be



Longitude 10 degrees latitude-2 degrees, which equates to a solar illumination of approximately 50%. However, PLEASE DO NOT use the TRANSPONDER if the beacon or transponder signals start FMing. This is likely to start at the end of August, and users will then be asked NOT TO USE the transponder until probably the beginning of November, when the attitude estimate on 05 Nov 90 Longitude 2 degrees and Latitude 3 degrees which equates to a solar illumination of 60%.

AMSAT-OSCAR-13 Transponder Schedules Until 17 Oct 90

Attitude approx 210/0

Mode-B : MA 003 to MA 165

Mode-JL : MA 165 to MA 190

Mode-LS : MA 190 to MA 195

Mode-S : MA 195 to MA 200

Mode-BS : MA 200 to MA 205

Mode-B : MA 205 to MA 240

OFF : MA 240 to MA 003

Omnia : MA 240 to MA 060

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AR

EDUCATION NOTES

BRENDA EDMONDS VK3KT
FEDERAL EDUCATION CO-ORDINATOR
PO BOX 565 Mt WAVERLEY 3149

It has been suggested many times that we need to be recruiting more young people into our ranks. We are told "Get amateur radio into the schools". A few members have done this, either as teachers prepared to offer it on a regular or casual basis or as visitors into the school's setting up demonstration stations. But there is rarely any co-ordinated approach to either the schools or the students. There needs to be a continuing program, if students whose interests are aroused by a demonstration station, are to be nurtured along until licensed.

At the recent Federal Convention, I was given samples of work units produced in New Zealand and also America, which were designed as part of a classroom science program for primary students. The NZ ones comprise a set of booklets consisting mainly of simple electronic activities, with minimum theory. Completion of two projects earns an Attainment Certificate from the NZART.

As far as I know, nothing like this is occurring in any Australian primary schools. If it is, I would be most interested to hear from

those involved.

However the WIA has recently decided to investigate the possibility of producing a similar set of materials for use at either late primary or secondary level. We would need to provide projects that can be used by teachers who are not amateurs, and who may not even have much training in electronics.

It is envisaged that a package of materials could include worksheets for simple electronic experiments, more extended units of work requiring some understanding of theory, information on how to start becoming a SWL and on sources of components, some publicity about amateur radio and the WIA, and how to contact persons who can help. It should be available at minimum cost, and copyright free.

I am sure that a lot of this material is already in existence and is being used in some schools, or in Scout/Guide groups. Some of the old YRCS materials may still be in use. However, I have very little information, and no sample materials.

This seems to me to be a project that could well be carried out on a national basis, by an

approach to the Australian Science Teachers Association. So I would like to make a start by collecting samples of all materials that are presently available, whether being used or not, and any suggestions that members may care to offer. I would also appreciate offers of help to produce items which are not readily available. I am happy to co-ordinate, arrange production and approach the Teacher Associations, but I am sure there are many of you out there much more competent and experienced in many of the other aspects.

This is one instance where we must take a very long-term view. The children we approach next year may not join our ranks for several years, and even then we cannot expect to recruit more than a small percentage of them. But it is a section of the population that is at present receiving very little of our attention.

I am also interested in preparing a directory of schools with active amateur radio clubs or stations and their operating times/frequencies, so that schools can contact each other, or some of our more public spirited members can offer encouragement on air.

I look forward to receiving comments, ideas and information on all these matters.

ar

BOOK REVIEW

ROB CARMICHAEL VK3DTR

Title: **The Official History of Australia in the War of 1914-1918. Vol IX.**

Author: A W Jose
Publisher: University of Queensland Press in association with The Australian War Memorial

1990 is the 75th Anniversary of the landing by the Anzacs at Gallipoli in 1915. Reference to this battle was made by Bert Bilhings in the article "The Last Wireless Anzac" written by Jim Lanton, VK3PC, and published in the April edition of AR Magazine.

I thought that many members of all ages who are interested in history, and particularly history in relation to the development of wireless as it was called in the early days, would like to read this enthralling book.

It is excellently detailed and contains a wealth of historical material regarding the roles played by the Australian and New Zealand Navies from the outbreak of the Great War in theatres spread throughout the globe.

Also included are very clearly reproduced photographs in support of several chapters describing many actions. The lenses of cameras used in those days were of wonderful

precision. There are sections dealing with official accounts from the German side of things including the Sydney/Emden fight.

Interesting too are the chapters dealing with the Australian troops take-over of the German Pacific Possession which covered parts of New Guinea, the Solomons and islands like Yap and Nauru where they had powerful radio stations.

Australia had no powerful radio installations in Melbourne, Sydney, Brisbane, Adelaide or Perth in the early days of the Great War. There is a chapter dealing with the development of high power spark transmitters. England was unable to despatch urgently required radio equipment to Australia at the time because of the demand of the Royal Navy and other British services.

The chapter on radio telegraphy is fascinating. It describes the then attitude of the Post Office which, in 1909, had been considering a proposal by the German Telefunken Company to erect stations in Sydney and Fremantle and had gone as far as to accept the Company's tender and to ask the Defence Department about sites. The report of the conference held in Melbourne in December 1909 therefore instead of hastening the intro-

duction of a wireless system delayed it by making the whole scheme Imperial, blocking the Telefunken proposals and necessitating negotiations with other Governments.

The Post Office maintained its right to sole control of the business and refused to do anything until the arrival of an expert whom it had engaged. He was John Graeme Belsillie who, when he reached Melbourne, caused work to be hurriedly begun on several stations without either the Naval or the Military authorities being consulted.

Because of the shortage of components, local factories came to the fore. No drawings were available in Australia at the time but twelve 5 kilowatt arc continuous wave transmitters were designed and manufactured. Amongst these new designs were a transmitting oscillator of the two-coil type permitting quick change in transmission of wavelengths from 300 up to 2500 metres for shore stations and a new type of aerial tuning coil. One wonders if there were any amateur radio experimenters who helped with those developments.

It's great reading. Try to borrow a copy from your Regional Library. You won't regret it.

ar

INTRUDER WATCH

GORDON LOVEDAY VK4KAL
FEDERAL INTRUDER WATCH CO-ORDINATOR
'AVIEMORE' RUBYVALE 4702

A request from the Philippines Association:

"Recently our National Telecommunications Commission (NTC) sub-allocated the 430-440 MHz band wherein we lost the Amateur Satellite Frequencies to commercial users. One of the strongest arguments we presented was the interference this may cause on the Amateur Satellites, especially with the launching of the Microsats.

Although we lost the fight, we have not given up the battle, and we intend to fight some more.

In this connection, could you please circulate this to all monitoring stations, so that if and when they hear a Philippine commercial intruder on the amateur satellites, to send us right away a signed official report of this interference. We intend to present this to our NTC for them to realize what they have done".

Any operators using the 430-440 MHz satellite, should lodge their observation with me for forwarding to the PARA. Is this a warning to us, use it or lose it?

A comment from the JARL News for May '90 caught my eye. Kokusai Denhin Denwa Co have recently developed equipment which almost completely eliminates the "woodpecker". For the moment it is being used on ship telephones, but utilization for amateur radio is also under consideration.

With a bit of luck, "AR" readers should see a return of the monthly summaries, in our magazine, these will be in an abbreviated form, owing to the restriction in size of the magazine to 56 odd pages, however, the full summary will be available to any person on receipt of a SAE.

I have received advice from DOTC, stating that we will be STILL sharing the 30 metre band with Landmobile Stations ie, 10100-

10150 kHz. I quote further, "The Australian Table of Frequency Allocations, as contained in the Radio Regulations published by the International Telecom Union (ITU), allocates primary use of the 10100 to 10150 kHz band to fixed services, and secondary use to amateur services. However, it also provides that use of this band by the fixed services will be limited.

The new draft Australian Spectrum Plan no longer references the limitations on the

use of the band by the fixed services. The plan also proposes that the band be allocated to the radio location service on the condition that harmful interference will not be caused to other services operating in accordance with the Australian Spectrum Plan or the ITU Radio Regulations.

While the Department has generally not allowed the expansion of fixed services in this band, there are no plans to have them vacate it. Amateur services will have to continue to share this band with the Fixed Services." So there you have it, no more queries about hearing voices, unless coming from Broadcasting Stations. They are intruders. These remarks also apply to 17 metres .. 18.068 — 18.168 MHz. Till next time, 73.

May 1990 Summary

Freq	UTC	Date	Logs	EMN	ID	Comments
144023.5	mni	mni	16	F1B	In	Cypher "Boris"? 250 Hz shift 3rd R
14046+/-	0900+	2004	34	A3E		U/LSB Rad Teleph 24 hr str
14058+/-	0600+	"	44	A3C?		Suspect Ch Henschreiber update
14071/75.5	dly	dly	73	F1B	VRQ	Vietnam
14140	1040+	2004	10	A3E		2x B/C, USR + Radio Tirana??
14140.5	dly	dly	17	A1A	UMS	+F1B 250 Hz 3rd reg USR Naval
14211.5	0855+	mni	10	F1B		Txt in cypher 250 Hz shift
14217.5	1100+	"	17	"		same as above
18100.5	2057	1505	2	A3E		same freq 2x B/C speech & music
21082	dly	dly	54	A1A	UMS	24 hr op, USR Naval
21113	0600+	mni	6	A1A	CQ5	+F1B "Been on holiday"???
21115	0600+	1905	"	FH6		Uses same freq & text as CQ5
21284	dly	dly	30	"	UMS	+F1B very persistent intruder
21405 +21450	"	"	74	A3E		Rad Moscow, English, W/Wide service
24950	"	"	16	"		ID not U/stood/ B/C Chinese 18 hrs op
Above 5th harmonic of 4.990 MHz						
28095	2350+	2604+	7	A3E		R.Beijing/3rd Har of 9365 S 6 in Bris
28350	dly	dly	13	"		3rd H of 9505 MHz
28575	0612+	1405+	7	"		Music & talk in English B/C,

Many B/Cast stations in the 10mx band (28-29.7) causing unnecessary problems and disrupting legitimate use of amateur frequencies for very long periods of time. These are the most heard intruders in our bands for May 1990 and were compiled from reports of VKs 2COP, 2EYI, 3XB, 4BG, 4AKK, 4BHJ, 4BTW, 4BXC, 4KHQ, 5TL, 6RO, 6XW and 8HA.

A full copy of the May Summary will be supplied to anyone on receipt of SAE.

SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH
52 CONNAUGHT CRES WEST LAUNCESTON 7250

As I'm writing this, we are in the grip of midwinter. It has been a very cold, damp late June-early July here in northern Tasmania. Only a few days ago, my old home town of Deloraine was snowed in, with the kids being sent home early from school.

For the past week, it has been raining continuously here, so this has provided me ample opportunities to spend some time monitoring the spectrum.

Naturally, the best period for doing just

that has been in the local daylight hours, with plenty of signals propagating in from Europe and the mid-east. Even the 49-metre band did provide some reasonable signals via the polar path around 0200 UTC, compared with last year.

Mainly it was Deutsche Welle or Radio Berlin International, Swiss Radio International or the BBC which were able to be identified.

And, while we are on Radio Berlin International and Deutsche Welle, I believe that it is

probably inevitable that these two international broadcasters will merge into a single organisation, ahead of German reunification, which could come as early as December this year. On 1 July, the two Germanys merged their economies, abolishing their domestic borders to allow the free flow of trade and commerce.

The name(s) of the new international arm of German international broadcasting have yet to be announced, although the superior technical facilities and studios are in Bonn, but if Berlin was to become re-established as the capital of a united German state the decision could be to centre the broadcasting activities there. Keep tuned to both RBI and Deutsche Welle for the latest developments.

The VOA recently had a budget overrun and consequently has had to cut back on its audience mail, according to "Media Network" on Radio Netherlands. I believe they will be back to normal by about October, when more funds become available. On the other hand, Radio Beijing is going out of its way to win back its listening audiences by sending listen-

ers a bulletin called "The Messenger" with advance program details and frequency lists. Incidentally, Radio Beijing has retimed its Australasian releases in English to 0900 to 1100 UTC, without any frequency alterations.

Recently, I came across a program specifically designed for amateur radio enthusiasts, from Radio HCJB in Quito, Ecuador. It is

aired on Wednesdays at approximately 0750 UTC on 9745 or 11925 KHz. Hosted by John Beck, who is himself an avid operator from Quito, the program is for amateurs by amateurs and runs for about 15 to 20 minutes.

Well, that is all for August. Until next time, the very best of listening and 73 DE VK7RH

AM

ALARA

JOY COLLIS VK2EBX
PO Box 22 Yeoval 2868

I was quite surprised to see the addition to the ALARA column in June AR, which, though a bit sneaky, was me. My thanks to the five contributors named, and also the Editor of AR for publishing the article (I'm still trying to figure out where they got some of their information!)

Currently I am still getting used to retirement from school activities, and wondering how I ever found the time to go to work anyway. I must confess it is pleasant on these freezing winter mornings to linger by the heater sipping another leisurely cup of tea instead of having to get up early and rush out in the cold. Yes, I can definitely recommend it!

Schools And Amateur Radio

During Term One I was asked to talk to Year Seven at Yeoval Central School about amateur radio as part of a communications lesson. This was enthusiastically received, and as a follow-up the class came around to my home on 21st June to see how it all worked.

Squeezing twenty-two children and one teacher into my small radio shack required a little ingenuity, but somehow it was achieved.

We were very fortunate to have two school groups on air, and to be able to talk to children from other schools, and would very much like to thank the Blue Mountains Grammar School with John VK2BJA and Marryatville Primary School with Grahams VK5AQZ, also Camberwell Grammar School VK3BCG who came in just as we did not have much opportunity to let the children talk to the Blue Mountains Grammar School. Our sincere apologies to them.

The Yeoval children showed great interest, asked many questions, and hopefully gained some insight into what amateur radio is all about.

It has been suggested that, as many of our members are involved with schools, it might be a good idea to compile a list of those schools which do have amateur radio facilities to see if more get-togethers on air can be arranged between them. Some schools are quite active in the hobby of amateur radio, and would welcome such activities.

It is, after all, the younger generation who

will have to provide the radio amateurs of tomorrow, so our hobby, with all its facets, is to survive.

Dubbo ALARAMEET 29/30th September

The ALARAMEET is fast approaching, and by now all those attending should have booked their accommodation and made arrangements for someone to feed pets, water gardens etc. It is requested that everyone who has membership badges, (WARD, BYLARA etc) bring them along, and also give some thought to communications for local mobile contact (2 metre hand held etc). Another aid to recognising ALARAMEET vehicles is to look for those with yellow and black ribbons attached to the aeriels. Rather an original idea for easy identification.

It should be a most enjoyable weekend.

Aerials Are For The Birds

Any amateur radio operator is justly proud of a neat aerial array soaring magnificently skyward, resonant on the desired bands, and operating efficiently.

Unfortunately that mass of wires, piping and cable up there too often attracts avian acrobats in great numbers who enjoy nothing better than chewing our insulation, ripping cable to shreds and bending beams into useless "U" shapes!

Such a problem afflicts one of our VK2 members, who has had her activities severely curtailed by flocks of gulls prevalent in her area. Various solutions have been suggested, bearing in mind that the aim is only to deter the birds, not to destroy them.

A resident of Yeoval, endeavouring to keep gulls off his TV antenna regularly bangs on a piece of tin every night just as the birds come to roost. Although the noise can be heard all over town, and the birds do fly away, they are back again the next night, so obviously this idea has limited value.

A certain OM came up with the idea of feeding the gulls wheat which had been dipped in whisky, so that they would be too drunk to fly! Apart from the obvious cost (even

cheap "plonk"?), and the rather doubtful eye of the RSPCA might cast on such proceedings, it is hard to imagine what this particular YL would do with all those inebriated birds staggering about the yard. There is also the danger they might become addicted to the stuff and keep coming back for more.

It is obvious some other solution will have to be found. Until then commiserations to everyone who has such problems. Suggestions welcome!

Bits And Pieces

Well known DX'er Clair, EI7CW was operating from EA8/maritime mobile off Majorca in June.

Denise VK5YL came on the 222 YL Net from KH6 during July, a new YL country for some.

Congratulations to Norma VK2DJO on the arrival of a baby daughter, Lorraine, and to Bobbie VK2PKS, the proud grandmother.

The VK5 ALARA Birthday luncheon was held on 29th July.

We were pleased to hear Beryl VK2BBM on the ALARA Net recently. Beryl is a long-standing member of ALARA, but does not get the opportunity to come on air very often.

I was very pleased to catch up with Austine VK3YL on the VE/VK/ZL net. Austine, in her 60th year of amateur radio activity (May "AR") still enjoys DX and a chat with her friends.

Regarding the photograph of Austine printed with the May article, we did omit to mention that it was taken by Ken McLachlan VK3AH. Our apologies to Ken for this oversight, and we do hope your health is improving, Ken.

Until next month,

7/3/93.

Two typesetting errors managed to creep into these notes in the July issue. The call sign of Sandie Franchi, BYLARA secretary should have read G1LXM. Pearl, WARD operator of the year, was wrongly described as ZL1WY on the bottom of page 43. Her correct call sign is ZL2QY.

ar

**Remember to leave a
three second break
between overs when
using a repeater**

DIVISIONAL NOTES

VK2 NOTES

TIM MILLS VK2ZTM

Division Introduces Classes

The VK2 Division moved from Atchison Street in July 1982. For twenty years prior to that, personal lecture classes had been conducted at Atchison Street, where a section of the building had been set aside as a class room. When the move was made to Parramatta, no provision was made to conduct any classes. With the recent exam transfer to the Amateur Radio Service, the Division has acquired suitable chairs and tables. The first class commenced on Monday the 23rd July. While this break in Divisional classes has been just under 10 years, a look back in the Division's history indicated that there was a break from 1929 to 1946 without a class. However, since the early 1960s the Division has conducted the Correspondence course and, judging by the number of books printed over the years, there must be a few thousand Amateurs both in Australia and overseas who have made use of the course.

Exams

The next exam to be conducted by the Division will be in conjunction with the Victorian Division. It will be held on Tuesday evening the 21st August. Closing date for applicants is 31st July. This is a change from the dates shown in last month's notes. The Sydney end of the exams will be held at Amateur Radio House on this evening. Exams may also be held at other locations and these will have been advised over the VK2WI broadcasts.

During the past few weeks many clubs and groups have conducted their first exams in their local area. Don't forget to keep the Divisional office advised of future dates, so that we can let the many enquirers know what is available in their areas. It may be desirable to hold a get-together later this year with all those conducting exams, to discuss the various aspects and problems, if any, of the exams.

VK2WI

The recently introduced 30 metre morning SSB transmission on 10125 kHz has certainly improved the coverage. It nicely complements the 40 metre service. There have been times when one of the bands has gone out but the other remains up. The IPS predictions for this month indicates that to most parts of the State the optimum working frequency is centred on 10 MHz.

An ATV repeater is to be added to VK2RWI

soon. Input on 23 cm FM with an output on 70 cm Ch 2, A5. Tests have still to be conducted to see how it will live with the various bits of existing RF.

Now that the new voice Bulletin Board is available on (02) 552 5188 which is interactive, the old answering machine on 651 1489 will be taken out of service during this month.

The fireworks were not held this year. It seems hard to find a dry weekend for one thing, and the other was that the rain had made a real mess of the driveway at the gate.

Orange ARC Regional Meeting

The Orange ARC is to conduct a regional gathering at Orange in late September. Check the Club Corner column for details.

Repeater Linking

A meeting was held 30th June to discuss the possible development of a system to link together Capital Cities, like Sydney to Melbourne. It was noted at the meeting that similar interest was starting in other parts of Eastern Australia, and it would perhaps be desirable to proceed towards doing this on a nationally co-ordinated basis. The meeting had been requested by Bob VK2YRX and those attending the meeting appointed Bob to prepare the report for presentation to the Divisional Council.

Activity Registers

There is the need to establish registers of activity in the ATV and microwave regions. Would Clubs and Members please compile these and forward to the Divisional council ASAP. Details have been given on the broadcasts.

Sydney Field Day

The Sydney Radio Group will be conducting their annual event at the St Ives Showground on the 5th August. The Division and Gladsville ARC will share a display at the Field Day.

Repeaters

It is hoped that repeater groups will have checked the details of their systems for the next Australian CALLBOOK. Recent new systems and changes include: Chiffley ARC commissioned their 7075 VK2RCZ in Western Sydney; Southern Highlands ARS channel changed VK2RHR from 7350 to 6825 to live with local pagers; Goulburn VK2RGN is back on air. Their system is reversed on 7925 also to avoid pagers. The Goulburn ARC will be adding a 70 cm repeater: Great Lakes at Forster is now operational on 7375, Hunter WICEN may establish a 2 metre repeater in

the Upper Hunter. An ATV repeater (23/70) is to be established at VK2RWI. Dural, An application for a 6 metre repeater for Jervis Bay on the South Coast has been received. With the changes to channel allocations on 6 metres, now is the time for any group to notify the State Repeater Co-ordinator, if they wish to be included in the allocations. Due to the nature of 6 metre propagation, the allocation of these channels will have to be co-ordinated through FTAC.

Wagga ARC have had to change their 70/50 repeater VK2RTW to an m-band 70 cm, as a channel 35 commercial service has been activated in their region.

WICEN (NSW) Inc

Major activities include City to Surf in Sydney 12th August. Brett VK2XMU is Co-ordinator; AGM at Amateur Radio House 18th August; Car Rally as a joint exercise with VK1 WICEN at Batemans Bay on the 1st September. Peter VK2EMU is Co-ordinator.

A posting of newsletters was made to members during July with the renewal notice for dues for the period 1/7/90 to 30/6/91. A separate posting for the AGM was also made. For details about WICEN write to PO Box 123 St Leonards NSW 2065, or leave a message with the Divisional office. By now most clubs should have received a posting with WICEN material for their information.

While WICEN has both National and State organisations, the operational side of WICEN is at the local level. It is here that those able to assist by being members of WICEN are trained and conduct the majority of exercises. A local group can be formed, often from members of one or more local clubs, and a local co-ordinator is co-opted (or arm twisted). In turn the local co-ordinator works under the Regional Co-ordinator. Your local club should have copies of the WICEN details and membership applications. If there is not a club local to you, then contact the State Committee at the address above for membership details.

Slow Morse Sessions

A reminder that VK2BWI is operational every night at 8pm (local) on 3550 kHz. It is conducted by a team of operators who spend considerable time in presenting the session. All amateurs are requested to leave the frequency clear so that future amateurs have every chance of learning the code. There have been problems at intervals where interstate amateurs decide that it is a "clean" channel for their nets. The morse session is intended for all of eastern Australia. The VK2BWI session is followed by VK5AWI with their session.

RD Contest

VK2 needs your participation and your log for the State Score. The broadcast for the RD weekend is conducted at 5.15 pm on Saturday afternoon. There is no Sunday morning trans

mission but the evening is at the usual time of 7 15pm

New Members

Our usual warm welcome is extended to the following who joined the Division during July

D J Barrett	VK2LDB	Edgeworth
P L Becham	VK2XQV	Werrington
P H Clutter	Assoc	Bateau Bay
S Garozzo	Assoc	Reveaby
F Horton	VK2MIL	Illawong
G R Jones	VK2CCK	Balmmain
S Monzen	VK2FGP	Sydney
V Saunders	Assoc	Merrylands
E D Simpson	VK2BJ	Chatswood
E Turner	VK2NLU	Bradbury
J W Turner	VK2MIQ	Ryde
A E Zakaradkas	VK2FJD	Maryland

PO Box F319 GPO Perth 6001. Remember to send Jim a quantity of SAE so incoming cards can be returned.

WA Division phone number is now (09) 388 3888.

73

5/8 WAVE

JENNIFER WARRINGTON VK5ANW

Correction

It seems that even before this column gets into print it's out of date! It seems that Nigel VK5VB will not be around to get that "Buddy System" off the ground. Nigel will be moving to VK6 in the very near future and our loss will be their gain, but if anyone would like to take over that "Buddy System" Register, Council would be delighted to hear from you.

Resignation

Good volunteers are always hard to find and when it is one who has been around as long as John Gardiner VK5KJG then the

"void" is even harder to fill. According to my sources, John joined Council in April 1983 and held the position of Minute Secretary until April '84. In April '84 he took over the position of Publications Officer from John Mount VK5EV, and was also Building Supervisor at the BGB. In April '85 he swapped the Building Sup job for Education Officer but continued with Publications as well. He held the two portfolios until April '87 when he retired from council and since then he has continued to be Publications Officer. Unfortunately, John has now decided that enough is enough, and we are looking for someone or several people to run the Publications side of things. If you feel that you could help, please contact a member of Council. And to John, our grateful thanks for all you have done over the past six years. Listeners to the Sunday Morning Broadcast will also be aware that John has been one of the 2m relay team for the past couple of years, so we will be looking for another volunteer there.

Public Relations

Council is looking for a volunteer to fill this very important position also, don't be put off

VK6 NOTES

JOHN HOWLETT VK6ATA

Council is not just relieved but in fact very pleased to welcome John Farnan VK6AFA as our new secretary. The position has been open for some 18 months, and secretarial duties being shared among the council members and co-ordinated by president Alyn VK6KWN. Ross VK6DA has done a splendid job as minute secretary and has decided to retire from the co-opted position. Thanks Ross, hope you will tackle another job soon.

Information

Christine VK6ZLZ has produced a new version of the information sheet giving details of services, clubs and affiliated groups, phone numbers etc. The information sheets will be given to new members when they join. No doubt copies will be available to existing members at WIA meetings or when renewing membership.

Bookshop

New titles are being introduced to the already substantial list of books held by bookshop officer John VK6GU. Discuss your technical literature or QSL printing needs with John at the next WIA meeting or ring 497 1616 and do business by phone.

QSL Cards

Remember the station you worked a couple of months ago? Well, he has probably taken the trouble to send you a QSL card because you seemed a nice person. Don't let yourself down, collect the cards from the QSL Bureau on a regular basis and send one in return. Should you need help, or require QSL stamps, contact Jim VK6RU at WIA meetings or phone 385 9664. Country members can post cards to



The Retiring VK5 Council. Back row L to R John McKellar VK5BJM, Ian Watson VK5KIA, Ben Broadbent VK5ABE, Bill Wardrop VK5AWM and Hans Van Der Zalm VK5KHZ.

Seated L to R

Alan Mallabone VK5NNM, Jenny Warrington VK5ANW, Don McDonald VK5ADD and Rowland Bruce VK5OU. Bob Allan VK5BJA and Peter Maddern VK5PRM were not present.

by the title. Perhaps "Recruiter of new members" would better describe what they have in mind. If you feel that you have some talents or ideas in this area, again, let Council know. Once again perhaps, a team could prove to work better than an individual. Don't keep those good ideas a secret!

What do I get for my membership? or what do "they" do with the money? are a couple of hackneyed phrases that get mumbled (of should be that "grumbled") around from time to time. Well, have you used a repeater or a Beacon lately?

The Insurance bill alone, for the Division this year is \$1788. That includes Insurance of all the Beacons and Repeaters, all the equipment at the BGB for fire and theft, public

liability at the building or anywhere we put on a Display and cover for people working on repeaters etc. Add to that, the cost of maintaining the Repeaters' Coax, site rents, licence fees, and you are JUST starting to see what they do with your money!

Incidentally, it is hoped that by the time you are reading this Ch 8 Repeater (7000) will again be in use after its untimely demise on July 2. It is hoped to have it in the air as quickly as possible, even if it has to be a temporary arrangement to start with.

Another Past President will be hung! (on the wall of the BGB, that is) My thanks to Ross Dow VK5KF, for providing me with the first colour photograph to add to our collection.

Diary Dates

Tues 28th Aug A Deceased Estates Buy & Sell

Tues 25 Sept. The Display of Members' Equipment Night. Bring along any piece of home brew gear that has not been entered before, tell us all about it, and be in the running for one of the prizes that are offered.

Congratulations

- to John VK5BJM who becomes the second Vice President
- and to Don VK5ADD who becomes the new Examinations Officer

Our thanks to John Andersen VK5ZFO who was the co-ordinator through the 'setting-up' stage

QSL's FROM THE WIA COLLECTION

KEN MATCHETT VK3TL HON CURATOR WIA QSL COLLECTION
PO Box 1 SEVILLE VIC 3139

The Olympic Games and Amateur Radio

(Part 2)

RM30

The 1980 Olympic Games held in the USSR was the first ever in a Communist country. Moscow was the principal centre, but some events were held in Minsk (White Russia), Kiev (in the Ukraine) and in Leningrad. Yachting was conducted in Tallinn (capital city of Estonia). The USSR was not backward in providing publicity for its Olympic Games through considerable numbers of QSL cards despatched from its central Bureau. The Radio Sports Federation of the USSR and the Krenkel Central Radio Club jointly sponsored the "Olympiada 80" award for radio contacts with certain stations using especially allocated prefixes for the Games during the period 1st Jan-3rd August 1980. These prefixes were: RK1, RW1, RX1, RZ1, RK2, RU2, RZ2, RK3, RV3, RW3, RX3, RZ3, RK5, RT5, RY5 and RZ5. In addition, there were five so-called "Olympic Club Stations" each carrying a special prefix. These were RM30 (Moscow), RL10 (Leningrad), RT20 (Tallinn, Estonia), RM20 (Minsk, White Russia) and RK50 (Kiev, in the Ukraine).

The RM30 QSL shown here was sent from the Olympic Station in Moscow to Ron VK3QP and is dated July, 1980. It was the Moscow Games that came under the boycott of the United States, a move led by the then President, Jimmy Carter, over the Soviet invasion of Afghanistan. A few other nations followed suit (including Australia), but athletes were allowed to decide for themselves (in the face of moral pressure) whether they wished to go. The US athletes had no such option, the President threatening to revoke the passport

of any participating athlete!! Despite the boycott, over 5000 athletes took part, and a large number of world records were set. Security was very tight, successful athletes not even being allowed to make a lap of honour after their success on the track.

NG840

This pictorial QSL shows the scene at the opening ceremony of the 1984 Olympic Games held in Los Angeles. The especially allotted call sign was a modification of the amateur call NG60 through the courtesy of that operator. The letter "O" in the call assumed a new significance with the Olympics. The QSL card was sent to Roy Jonassen VK4NE (now an "BK") from the official Olympic radio station at the Games. The reverse side of the QSL

tells the story "Located in a ticket booth at the rim of the Drake Stadium on the University of California at the Los Angeles (UCLA) campus, NG840 began operation as the first athletes were arriving at the Olympic Villages for the XXIII Summer Olympiad. The cramped quarters (6ft x 15ft) and modest antenna placement (15ft up amidst 40ft trees) were limitations we had to live with, in order to be located where the athletes could get to us... in the high security "main street" area."

The station successfully logged 8000 QSOs, despite the poor conditions prevailing, and was instrumental in originating hundreds of messages from athletes around the world. American amateurs were permitted to use the prefix W23 (standing for XXIII Olympiad) as well as W84. Depending upon the home call held, N, K, WD and other prefixes were also used. The WIA QSL collection also holds the special station QSLs K84OG, W84OG and W23OG (Olympic Games), all from Stanford University, site of the preliminary soccer matches. It will be noted that the NG840 QSL

MOSCOW
THE CAPITAL OF THE XXII OLYMPIC GAMES

RM30

zone 15 ★ UK3AAA ★ reg 170
AMATEUR RADIO CLUB



displays five interlaced rings — symbol of the Games. De Coubertin found the emblem at Delphi in 1913 and immediately saw its application to the Olympics. He wrote, "These five rings represent the five parts of the world, won over to Olympism and ready to accept its bountiful rivalries. The six colours combined in this way represent those of every nation without exception."

HL88AQB

The tradition of amateur radio participation in the Games was certainly maintained on the occasion of the XXIVth Olympiad at Seoul, Korea, in 1988. All HL stations were permitted to use the special prefix HL88, several producing particularly well-designed QSLs as the one shown here. As in recent Olympiads, Korea introduced special numerical prefixes. Those of 6K24 and 6K88 were used for its official radio stations at the Olympic Village, Olympic Park and the Pusan Yachting Centre.

Hopefully Australia may be granted the 1996 Olympiad, but this will not be decided until September, 1990. If successful, perhaps radio amateurs throughout Australia will be permitted to use a special prefix for the occasion. By that year we may be imaginative enough to suggest a special call allocation like VISO or maybe VM30G. After all, there's always a first time for using our ITC-allocated prefix VM. In any case, let us all hope that should our bid be successful, the Games will be free from distasteful rivalry, and that they will enjoy a success no less than the "Friendly Games" of Melbourne 1956.

DX QSL contributors' award

As pointed out in an earlier edition of "Amateur Radio", last year's winner was Robin Lyon VK6LK of Margaret River, WA. Robin's success is gained on a Kenwood TS-830 S with an outboard VFO. The receiver is a very much modified Drake R4C. His antennas include a four-element yagi on 20m (at 80ft) and a five-element 10m yagi stacked above a five-ele-

ment 15m beam. For the lower frequencies there are three antennas for 80 metres and two Vbeams on 40m — quite an antenna farm.

Robin joined the British Army at the age of 17 (although the authorities had to believe he was 18) and served in north-west Europe during the war, with the rank of lieutenant. After the war he joined the Regular Army and served in the Sudan and Aden. Of course he had to be active on the bands. His calls were ST2GL and VS9AH. Whilst stationed in Germany, he operated as DL2XR. Retiring from the British Army with the rank of Lt

Colonel (after 25 years service) he migrated to Western Australia and was issued with his present call, VK6LK.

His main interest is naturally amateur radio, with particular attention to 80-metre DX. His confirmed DXCC Honour Roll totals are 316/332, which is truly a splendid effort. Robin lives with his wife Bernadette and son Kevin (who, incidentally, holds the call VK6TM).

We wish him continued success on the bands and again thank him for contributing so generously towards the WIA's own QSL collection.



Robin at his rig. The Kenwood TS830 S is to the left, with a Ham M rotator on top. To the right are the Drake twins, the R-4C and a T4XC.

AMATEUR RADIO
HELPING OUR COMMUNITY

CLUB CORNER

The Orange & District Amateur Radio Club Inc. will be hosting a Western Area Meeting of radio clubs, amateurs and other interested parties to discuss matters of mutual interest and concern on Saturday, September 22, 1990.

All are welcome and encouraged to attend Venue: Shortlist of three (Bloomfield, SES, Ex-Service Club)
Schedule: Four sessions in two time slots.

Preliminary agenda below:

Session 1A	Session 1B
1pm (Political) Federal Report VK2 Div Report	(Techno-Political) Packet Developments Present State & Future Directions
Repeater Sites Repeater Linking	
5pm Exam Devolution Feedback	
Dinner Session 2A	Session 2B
7pm (Operational) Band Planning — WARC 1992	(Technical) ATV Exotic Modes
9pm WICEN recent reports Western area preparedness & exercises	CW

Logistics: Travel out on Friday or Saturday, travel back on Saturday or Sunday. Dinner on Saturday will be informal, either at participants' whim or at a restaurant chosen by the organisers. Excellent hotel accommodation, including a light breakfast, will be available.

A charge of \$5.00 per head will be made to cover refreshments and printed material. When accommodation arrangements are finalised, a deposit may be required from those wishing to take advantage of block booking rates. This will be advised in time for it to accompany the meeting fee.

More details to follow as the plot thickens

For information, contact the club at PO Box 1065, Orange 2800. Colin de Kantzow VK2JCD on (063) 62 6617 (BH) or (063) 65 3387 (AH) or Kim Stevens VK2ASY on (063) 62 3710 (AH).

This is a preliminary notice only, and more detailed information will follow soon. Suggestions for agenda items, topics and speakers are welcome, as are bookings for meals and accommodation.

SILENT KEYS

DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE NO LONGER THAN 200 WORDS

We regret to announce the recent passing of:

Mr Glen Russell-Smith	VK1ZGR
Mr R C (Ned) Paton	VK2BRP
Mr Roy Cornish	VK2KRW
Mr A Both	VK2TTH
Mr C J Reed	VK3IX
Mr G W Small	VK3TJ
Mr Warren Edmanson	VK3NVM
Mr L E Catford	VK5LC
Mr L G Wilson	VK6LG
Mr V P A Magry	VK6VP
Mr H F Skipworth	VK6WS
Mr J C Milne	VK7AG
Mr Warren Gower	VK7JAD

Warren Edmanson VK3NVM

Warren died on 1/6/90 at Moe Hospital, following the onset of a stroke.

Warren was a prominent and popular member of the Southern Peninsula Amateur Radio Club. Over the past 10 years he served as Treasurer and President. Warren was in his mid 70s, and shifted residence from Blairgowrie to Trafalgar in 1988 to be near his family.

Warren always had a cheery disposition and a fund of humorous "sayings" — some, no doubt, gathered whilst serving with the RAF during WW2. He took pleasure in helping other members, especially in coming to grips with CW. He took part regularly in the SPARC net, and was also a well known participant in other nets. His presence and voice will be greatly missed by members and his other radio friends.

SOUTHERN PENINSULA AMATEUR
RADIO CLUB

Warren Edward Gower VK7JAD

The death of Warren was a loss, not only to his immediate family and friends, but also to amateur radio in general. Warren had been interested in radio for many years, coming up through the ranks of CB and obtaining a limited amateur call VK7ZWG in February 1987.

He passed the Novice licence 12 months later and obtained the callign VK7JAD. He was a keen member of the WIA and enjoyed the regular Sunday morning broadcasts. Although not often in a position to call back after the sessions.

Warren's first love was for 2 metres, which he monitored virtually 24 hours a day. Warren was also keen on RTTY, and had several pieces of home made and modified commercial gear for this mode. He will be greatly missed by the other hams on King Island, for he was always ready and willing to assist with hoisting a mast, tuning an antenna, or helping to repair a piece of equipment.

Warren was only 31 years old at his death, and leaves a wife Tracey and four young children under 7 years of age.

MIKE WOOD VK7FE

Joe Brown VK7BJ

Joe was born in 1916 at a small town called Pyengana in the NE of Tasmania, where he began his education. Joe moved to Hobart in the early 1930s where he obtained employment with the National Broadcasting Service at 7ZL/7ZR studios, which were then controlled by the PMG Department.

This was Joe's motivating interest, and eventually he became a Supervising Technician. Later he became Officer-in-Charge of the installation and operation of the TV transmitters on Mount Wellington.

Joe joined the Institute in 1933, and was State Secretary in 1945 through 1948, State President 1950 and Federal Councillor for a number of years in the 1950s. He was granted Life Membership in 1949. Joe was also involved in the RAOTC for many years, and was the local Co-ordinator.

Being a "professionally based" amateur, he was highly regarded by all who knew him, offering help to those with a problem, be it technical or personal. His knowledge and expertise seemed unlimited, as was his ability to pass on that knowledge. Joe maintained his deep interest in the WIA, State and Federal until his death. He will be keenly missed.

The Tasmanian Division extends its deepest sympathy to his wife Mary and family. Vale Joe SK.

(The sun are no longer shining in Thurza St — Ed)

T ALLEN VK7AL

COPIES OF ARTICLES

Photocopies of any article published in a back issue of AR available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears)

AR ARTICLES
PO Box 300, Caulfield South Vic 3162

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION AND MUST BE LESS THAN 200 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS

Same Age

I must congratulate the Wireless Institute of Australia on its 80th anniversary.

My last letter, five years ago was on similar lines, when I said I was the same age as the Institute, but although we are still running neck and neck, we all know who will last the longer, hi!

I excitedly received my call in 1932, and joined the Institute the same year. We were given permission to broadcast on the higher end of the Broadcast Band and allotted certain frequencies and specific times on Saturdays and Sundays, but that ended suddenly at the outbreak of WW2. Besides the transmissions on the broadcast band we were allowed to use amateur bands at any hour. Mostly, amateurs constructed their own equipment and as there was not as much QRM nor high power stations around, the receivers did not have to be as selective as nowadays.

I must thank the Institute for their continuing battle in keeping our bands for our use, and especially the devoted people who spend so much time and thought in their preparations.

I would like to reiterate the important saying "USE THE BANDS OR LOSE THEM".

EDGAR NICHOLLS VK7RY

8 GARDEN LANE MIDWAY POINT 7171

Need For CW

In the June AR Lindsay Lawless in his "Dinkum Persuasion" letter, states that CW is a "pinacle to be conquered". I agree, but must we use it to serve the international community that authorises our existence? I think not.

We become amateurs because of an interest in radio communications, which has many facets (not just CW).

Rag Chewing on 80 or the local repeater can breed parochialism, in some cases. Many amateurs use 80 or the local repeater for club nets or local contacts etc, and if operations are within the terms of the licence then we are, in fact, serving the "international community" referred to.

Yes we are all persuaders and we should provide incentives and encourage upgrading but let's not coerce (and risk losing numbers). The decision as to licence level (and subsequent upgrading) is an individual choice based on what is desired from the hobby and what "affordable" radio communications means to that individual.

At this time, I do not use CW, spending most of my time on 10 or 15 DX (phone). However, I do not advocate the removal of CW

nor do I consider the lack of its use necessarily relates to a lack of ability to master the code.

DREK THURGOOD VK6JH

BOX 234 YARRA GLEN 3775

Abuse Of Privilege

For some years now I have been aware of a continuing and escalating abuse of amateur radio transceivers and amateur radio frequencies as a cut-price alternative to the official Coastal Radio Service. For a number of obvious reasons I find this abhorrent and I have today requested that the WIA protest most strongly to DOTC about this situation.

It is my fear that if this is not done then commercial, industry, and industrial pressures will result in increased costs to Australian amateurs contemplating the purchase of new HF transceivers.

To ensure that this does not happen I urge thinking amateurs to add their voice to that of others protesting about the creeping commercialism and egotism pervading our bands. Failure to do so I fear will result in a loss of privileges for all Australian amateurs.

DEANE LAWS VK4ALN

27 AWOONGA AVE BURLINGHEAD

4230

Australian Pirates

Amateurs who value their hobby should be concerned at the level of pirate activity above 27.405 MHz. There are many hundreds of pirates operating from Australia, most using QRO amateur gear with little apparent interference from a short staffed DOTC.

Equipment is easily obtained by these types, ready modified, from unscrupulous dealers, who have little regard for the ethics of aiding and abetting defiance of the law.

What happens when the unsupervised cycle declines and these people are left in limbo? Do they salt away expensive equipment for another five years or so? Not blooming likely! Today's pirates are tomorrow's intruders. At present there is little incentive for pirates to study for the AOCPE, why bother when you can do it all so easily, with little harassment from the authorities?

Every amateur who values his hobby should lobby the Government to have pirate activity stamped out, and should monitor the 27 MHz band reporting out-of-band activity. Remember 27 megs? It used to be yours; they got it but now they want more. It's your hobby that's up for grabs. Make a noise about it. It's up to you.

BOB ELMS VK6BE

72 DREW ST ALBANY 6330

Potato-Less Polarity

The June issue of Amateur Radio's great, particularly all the articles on test gear and basic principles which are explained clearly. Our licences imply we are technical people but still there is a need for more basic practical theory that one can learn from!

The bit I enjoyed was using the humble apud to determine the polarity of a battery. Very amusing indeed! If no potato is handy there is another simple method to do the same thing. Test gear needed, two bits of wire (perhaps scrounged from a fence?). Get a dollop of electrolyte from a cell, drop it on top of the battery case and with the two bits of wire connected to the battery terminals you dip the other ends into the dollop of acid without shorting them. Lots of little bubbles will appear around the Negative wire.

I thought it may interest someone out there. The technical explanation is that positive hydrogen ions are attracted to the negative (cathode) terminal from which hydrogen gas then bubbles up. I find it handy when working with strange and unmarked batteries one often finds around large machinery out bush. Usually start with a known battery so I don't get the polarity wrong and mostly a bit of fencing wire.

T BARKER VK4CBP

4 SEATON ST TOOWOOMBA 4350

All In For WARC

Congratulations to Henderson and Wardlaw for their excellent "WARC 92 Update" in April AR. I have made copies of the para headed "The Amateur and Amateur Satellite Service" to give to interested people and organisations in my district; to inform them of the real purpose of the ARS and the ARSS, and of some justification for their retention.

Our representatives will do their best to influence the administrations involved in WARC '92 (and '93) but it is unfair to expect them to succeed without the support and assistance of every radio amateur. Assistance and support which must be much more than membership of a "National Society". It is foolish to delegate that sort of responsibility on the belief that they alone have the answers — the truth is, they do not. Success at WARC '92 is a task for the collective responsibility and intelligence of all radio amateurs.

If membership of "National Societies" is essential for success at WARC, the first problem for our collective wisdom is to discover why those societies are poorly supported. Less than 50% of licencees, world wide, are members. Our intelligence will need to find effective inducement. Intimidation is not intelligent and doesn't work; our persuasion is also unsuccessful.

LINDSAY LAWLESS VK3ANJ

BOX 112 LAKES ENTRANCE 3909

ar

HAMADS

TRADE ADS

● **AMIDON FERROMAGNET C-CORES** For all transmitter and receiver applications. Send D.L. size SASE for data/price to RJ & US Imports, Box 157, Mordialloc NSW 2223. (No enquiries at office please. 11 Macken St (Oatley). Agencies at: Geoff Wood Electronics, Sydney Webb Electronics, Albany Electronic Components ACT Truscott's Electronics, Melbourne Willis, Perth Assoc TV Service, Hobart

● **WEATHER FAX** programs for IBM XT/AT's *** "RADFAX2" is a high resolution shortwave weather fax, Morse & RTTY receiving program. Needs CGA, SSBHF radio & RADFAX decoder. Also "RF2HERC", "RF2EGA" & "RF2VGA", same as RADFAX2 but suitable for HERCULES, EGA, & VGA cards respectively \$35 *** "SATFAX" is a NOAA Meteor 7 GMS weather satellite picture receiving program. Uses EGA or VGA modes. Needs EGA or VGA color monitor and card, & "WEATHER FAX" PC card. \$45 *** All programs are on 5.25" or 3.5" disks (state which) - documentation, add \$3 postage. ONLY from M. Delahunty, 42 Villiers St New Farm 4005 QLD. Ph (07) 358 2785.

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● **YAESU FF-501** lowpass filter \$50 Yaesu FL2100B excellent \$800. Realistic AX-90 amateur band RX \$150. Kenwood AT200 \$200 Yaesu VY455 h phones \$10. Ron VK3OM QTHR. Ph (059) 443 019

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● **YAESU FT102** bwr am/fm \$950. FT101F bwr \$400 FGE 8800 rcr w/ht, preamps, \$550. Syd VK3DSP (059) 85 2170 tx rigs licensed amateurs only

● **DECEASED estate VK3GU** Offers are required for the following collector items: Radio Corp Receiver 150 kHz-15 MHz 7 battery valves in steel case. Command tx 3 to 4 MHz. Central Electronics transceiver 1.8 to 29 MHz believed to be AMCW Auto Keyer - Buzz products USA. Very heavy base Central Electronics Sideband Slicer - A Receiver adaptor RAAF A1047

radar display AWA AT21 aircraft tx RAAF APN4 ident unit - 5 inch crn. Army 108 set 2 to 3.5 MHz. Wavemeter - AWA class "C" 1.4 to 10 MHz. Contact John on (051) 56 6110 or Bob on (051) 56 7654 for more details

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Inductors, wide variety Coil formers Eddystone Set AR map 1987 2M Yag 10. VK3XB QTHR (03) 808 4686

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● **RTTY terminal** V2300 computer RTTY modem Apple 2C giscon monitor all leads including printer interface pc \$300 John VK4ET QTHR (07) 269 3942

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● **HAND transceiver** - Kenwood TR2400 Digital readout, 10 programmable memories, many other

Over to You cont Packet Group Sales

There is an article in Amateur Radio dated April 1990 by John Day attacking non-profit organisations and naming MPRGI for involvement in TNC sales. It further accuses it of having an imperative to do so, which in dictionary terms means an extremely urgent need to make profit the main aim of the club.

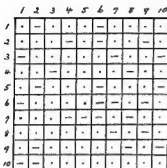
In answer the MPRGI reaffirms the non-profit status of the organisation. All funds gained from TNC sales and membership dues are directed to maintenance and advancement of club activities. These include ownership of a network of repeaters covering Melbourne. The network outlay and ongoing maintenance costs are beyond the reach of the majority of amateurs or the pockets of our dedicated and highly skilled voluntary group. The Committee volunteers time and operates expensive equipment on a no-cost basis to provide four major 24 hour Bulletin Board services. Without a source of funds and voluntary dedication there would be no repeaters and certainly no statewide market for TNCs.

Perhaps Mr Day would care to attend a meeting of the Club and reconsider his method of slating everyone in range before learning whether his and our motives have a common denominator.

Peter Broughton VK3AZQ
Melbourne Packet Radio Group Incorporated

ar

Solution to Morseword No 41



Across: 1 lens 2 skin 3 belt 4 feel
5 last 6 bake 7 sore 8 hike 9 revet
10 miss

Down: 1 fast 2 denim 3 iris 4 rile
5 hits 6 gaze 7 fare 8 stern 9 rind
10 inner

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly**.

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HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:

Call Sign (if applicable):

Address:

State and Postcode:

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Now it's bigger and better than ever, because our leading competitor *ETI* has been merged with us, to form *Electronics Australia with ETI* – the biggest, brightest and most informative electronics magazine, bar none.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and construction projects.

What about *amateur radio* projects? Well, as you can see there are more of these than before – but we're very interested in publishing more. So if YOU have developed an exciting amateur radio project, contact Jim Rowe by writing to him at EA, 180 Bourke Road, Alexandria 2015. Or phone him on (02) 693 6620, to discuss the possibility of publishing it as a contributed article. As well as earning a fee, you'll also be helping to boost interest in amateur radio!

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INCLUDED IN OUR AUGUST ISSUE:

SSTV TRANSMIT SCANCONVERTER – 2

The second article on this easy to build SSTV project by Leon Williams VK2DOB, describing the actual construction and testing.

EDWIN ARMSTRONG – 2

Neville Williams continues the story of this unhappy genius, radio amateur and engineer who was also inventor of the superhet and superregen and pioneer of FM.

LOOP AERIALS

Loop aerials have been an important part of radio ever since Hertz's experiments of 1887, and they still play a key role. Peter Lankshear looks at their development.

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The New IC-R1 handheld receiver



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